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EDITORIAL NOTE.

In the Second Series of Papers reprinted for the Straits Branch of the Royal Asiatic Society the Editor has been guided by the same principles and considerations which he had laid down for himself in the previous volumes. He may, therefore, confine himself in this Note to a few remarks in reference to some of the Papers of which the present series consists.

The two articles by the late J. R. Logan, who did so much for literary research in connection with Malaisia, were selected as supplementing his various contributions to the "Journal of the Indian Archipelago," a serial well known and highly appreciated throughout the Straits.

To the courtesy of Mr. W. P. Groeneveldt, of Batavia, the Council of the above-mentioned Society is beholden for the permission to incorporate in the series a new and carefully revised edition of his valuable monograph on the Malayan Archipelago and Malacca, from Chinese sources.

Dr. H. N. van der Tuuk's Essay on the Malagasy language, though seemingly far afield and out of place in a collection of *opuscula* dealing with Malaisia in its restricted sense, was thought to possess a strong claim to consideration because of its recognized importance as forming the foundation and corner-stone of a scientific intercomparison of the Malayan languages as a class. Originally intended as the first instalment of a more comprehensive treatise, but not carried further on account of the author's

return to the Archipelago, this Essay, consisting as it does of nothing but an introduction and a chapter on phonology, initiates, even in its fragmentary form, an era in this department of comparative linguistics. It appeared in 1865; but the canons established in it have but in recent years been confirmed, improved upon and extended.

No apology is needed for the re-issue of the English translation (revised from the Dutch original) of Friederich's "Preliminary Account of the Island of Bali." The continued existence, in unabated vitality, of a nationalized Hinduism, blended with pre-Hindu customs and practices, among a spirited and vigorous people, is not only, in the words of Sir Stamford Raffles,* quoted by Count Limburg Stirum in his recent graphic address on Bali, "a kind of commentary on the ancient condition of the natives of Java," it allows us also to draw a fair inference as to the kind of Hinduism at one time prevailing in other parts of Malaisia less favoured by historical records, where ruthless Islam has since obliterated to a great extent the traces of other creeds, traditions, and institutions. It is indeed essential to a proper understanding and estimate of the religious and social condition of the various and wide-spread Malayan tribes that the influence which Hindu civilization has, in a greater or lesser degree, exerted upon them, should as far as possible be investigated. To this end, Friederich's "Preliminary Account," though written forty years ago, still supplies the greatest number of facts and materials. Considering that it bristles with names and terms, both Hindu and vernacular, a certain inconsistency in their transliteration has been the less avoidable because the Balinese alphabet is but ill

* History of Java (London, 1817), II., App. p. ccxxxvi.; see also Discourse delivered by him before the Asiatic Society of Batavia on the 11th of Sept. 1815 (in "Verhandelingen van het Bataviaasch Genootschap," 2nd ed., vol. viii. [1826], p. 46); Proceedings of the "Tijdschrift van het Nederlandsch Aardrijkskundig Genootschap" for 1887, p. 4.

adapted for the correct reproduction of Indian words. However, the Indian spelling will be found to have been generally adhered to in the case of Hindu names. It would have been desirable to give after the dry details of Friederich's Essay a translation of Count Limburg Stirum's picturesque and most interesting sketch of the visit he paid to the island but last year. But the part of the Proceedings of the Dutch Geographical Society in which his address is given, was not published till several months after Friederich's article was in type. It must, therefore, suffice to have drawn attention to that address.

The unaltered reproduction, from the "Malayan Miscellanies," of Dr. W. Jack's paper on Malayan Plants had for some time been in type when the Editor's attention was called by Sir J. D. Hooker to the fact of two reprints being already in existence—viz., in his father's "Botanical Miscellany" (London, 1830–31), vol. i. 270–90; vol. ii. 60–89; and in the "Calcutta Journal of Natural History," vol. iv. (1844), 1–62; 159–231; 305–71. But while it may be assumed that these reprints are not readily accessible in the Straits, their very existence would attest the value of that paper if we had not also the concurrent testimony of Sir Stamford Raffles and Dr. W. Griffith as to the excellence of Dr. Jack's botanical researches. The present reprint, however, has also received welcome additions from two quarters. The vernacular names have been subjected to a philological examination by the Hon. D. F. A. Hervey, and Sir J. D. Hooker has kindly supplied the modern names of the plants and the references to the works in which they are described. To both scholars the Editor tenders his heartfelt thanks. In conclusion, the following answer which Sir Joseph has given to a query respecting the frequent discrepancies between Jack's and Filet's nomenclature is well worth transcribing: "To do justice to either Jack or Filet, without a critical knowledge of the Flora of the Peninsula and

Sumatra, is impossible. It is a task to be undertaken when the Flora of the Peninsula is put in hand, as I hope it will be, by Dr. King. I have urged that the Government of the 'Straits Settlements' should contribute the funds for such a Flora; and in case of its being undertaken, I would suggest that an intelligent educated native, with an eye for, and a knowledge of, the important trees, shrubs, &c., should be consulted as to every native name adopted in the work. I know by experience how little trust is to be put in native names collected anyhow, and that the credit given to natives for a really trustworthy native nomenclature is, beyond a certain point, visionary."

R. ROST.

LONDON, *September* 1887.

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MISCELLANEOUS ESSAYS.

I.

JOURNAL OF AN EXCURSION FROM SINGAPÚR TO MALACCA AND PÍNANG.

By J. R. Logan, Esq.

[From the "Journal of the Royal Geographical Society," vol. xvi. p. 304–24].

The following notes were written in the course of a visit to Malacca and Pínang, in March, 1845. After a residence of some years in the island of Pínang, the writer removed to the younger and more thriving settlement of Singapúr; and having obtained a short period of leisure, after two years of unremitted labour there, he employed that interval in a visit to Malacca for professional purposes, extending his voyage to Pínang. These notes were principally written on the spur of the moment for the amusement of distant friends; and I have only made some slight additions to render them more intelligible to those who are not so familiar with the Straits as my "constant correspondents" in Scotland by this time probably are, in the belief that, though but skimmings from the surface, they may perhaps be found not to be wholly uninteresting to those who are desirous of becoming more familiarly acquainted with our settlements in the Eastern Archipelago.

Malacca, March 8, 1845.—Yesterday I was in the midst of all the bustle of the Commercial Square at Singapúr, and am now in perfect solitude on a little open bangalá on the sea-side, three miles from the quiet old town of Malacca. I left Singapúr about five o'clock yesterday afternoon in the new steamer *Fire Queen*, which has just begun to ply between Calcutta and the settlements on the Straits. Among my fellow-passengers there were two gentlemen from S. America; one of them, extensively concerned in the guano trade, had brought a quantity of guano

from the islands near the S. American coast to China, thinking that it might be sold there advantageously; but the speculation seems not to have met with the expected success. The Chinese husbandmen, who never let anything be wasted which can serve as manure, had no great need of guano; and in the Straits of Singapúr, or close upon their northern entrance, there are islands of our own which yield large supplies of a substance very serviceable, if less rich than the American guano. The other passenger to whom I alluded above was a captain from China, engaged in the opium traffic, who had much to tell of Hong Kong. There were also two other passengers, Dutch gentlemen from Batavia, who were indefatigable in examining charts, reading Newbold, and consulting the Pínang Almanack and Directory. One of the latter is a well-informed and zealous officer in the Dutch navy, the Baron Melville de Carnbee, who has been engaged for the last ten years in scientific surveys of the Dutch islands, and is now on his way to Europe in order to publish large maps of all the eastern possessions of the Netherlands (Neërlands Indie), with a description of their volcanoes and mountains, the heights of which have been ascertained barometrically or trigonometrically. From him I learned that all the west coast of Sumatra, from Padang northwards, has been accurately surveyed; and that one of their medical men, who lately passed a whole year in the country of the Battas, is about to publish an account of what he saw, which, from his talents, is likely to be very valuable. We reached Malacca at half-past two P.M., having been above twenty-two hours steaming. On landing, I proceeded to the house of H——, a retired Chinese merchant, reputed to be the wealthiest man in the Straits, whose desire to consult me had occasioned my visit to Malacca. The Chinese houses here, at least the two or three I have been in, which are about the best in the place, struck me with admiration. They are unlike anything I have ever seen in the Straits, and bear a close resemblance to the representations of dwelling-houses in China which may be seen in books on that country. Koon Swee's house consists of two halls, from the ceilings of which are suspended many very beautiful and tasteful lamps of a peculiar kind. The walls are hung with pictures: some English, some Chinese, and a few French, the last not of the most chaste description. The second hall opens into a large court, of which the middle is depressed about a foot and a half below the level of the sides. Curious trees in pots are ranged in the centre. The private rooms open into an upper balcony, which overlooks the court. At the further end of this court is the *Shêw-chú*,* or ancestral—say, rather, paternal—altar, for they are only their more immediate predecessors whom they hold in remembrance. A wide pair of folding-doors thrown open disclose a long inner court stretching

* Shêw-chú—*i.e.*, the seat of the departed spirit.—F. S.

down towards a clump of trees. All the doors being open, the current of air flowing over the tiled floors keeps the rooms deliciously cool. At five o'clock a splendid dinner was served up in a little snug room adjoining the outer hall of H——'s house, of which repast he, out of complaisance, partook, but in which Koon Swee was prevented, by a vow, from joining, having, on occasion of the sickness of some relative many years ago, sworn that if she recovered he would not eat on certain days, save of some simple fare, which the pigeon soup, laksa soup, stewed ducks, curries, &c., before us did not include. So, at least, he excused his abstinence; but the jolly countenance of my aldermanic friend bore so little of a fasting look, that I was inclined to think his chopsticks had already served their turn for that day. After dinner, H—— loaded one palankeen with my luggage, and brought me out here in another. He busied himself for about two hours in making everything comfortable; a couch, lamps, a goodly basket of champagne, sherry, beer, and eatables followed from Malacca. The place I occupy is a sort of bungalow, or rather *bálaï*,* open all round, about thirty feet square, having two small rooms in the landward corners. The sea dashes against the beach within twenty feet, and is fast sapping the roots of a row of very old senna-trees. It has already worked up to their trunks, and they cannot hold out much longer. The scene at night, when I was left alone, was peaceful and beautiful beyond anything I had seen for a long time. The air was still; the stars gleamed amongst the high leaves and branches of the senna-trees. The cocoa-nuts threw their dark shadows on the land behind, and the sea in front glimmered in the starlight. The next morning I was on foot by half-past five o'clock, and took a long walk along the road in the direction of Tanjong Kling. When clear of the cocoa-nut plantation in which the bungalow stands, I found myself amongst paddy-fields, stretching away, on the land side, into a plain of large size bounded by low jungle, and on the other side not broader than a field in England. Presently the road turned towards the coast, and, as far as I proceeded, followed it, having only a row of senna-trees † separating it from the sandy beach. On the land side were clumps of cocoa-nut trees, sometimes running into each other so as to form a continuous screen; at other places broken, and showing the paddy-plains stretching inland. At short distances were doors opening through fences into Malay and Chinese huts. The latter proved to be shops; as daylight increased these were opened, and a few Malays took the road, carrying bundles of salt fish. The quietness of the road, the few houses, each separate, like a villa, from its neighbour, and the absence of crowds of children and

* Bálaï, an open hall of audience like the African Bentang.—F.S.
† A species of cassia (?).

fishing boats, sufficiently distinguished this scene from the coast of Wellesley Province, north of the Prye, which in other respects it somewhat resembles. I was delighted again to see plains of paddy in the ear. The greater part was already reaped. I struck off the main road, and proceeded about half a mile across the *bindang*.* Everything had a quiet indolent look; the very buffaloes were not to be disturbed by the intrusion of a stranger, and cropped the paddy-stalks and licked their calves without paying the slightest attention to my presence. The Wellesley Province buffaloes would have given a different and less agreeable reception to an *órang pútih* † who ventured to approach them. I walked till I perceived there was little more to be seen unless I prolonged my excursion beyond my walking powers. The *tout ensemble* is considerably inferior to the Mooda and Penága districts of Wellesley Province. The paddy is stunted in comparison; instead of long lines of *permatangs*,‡ covered with trees and full of inhabitants, there are only here and there a few scattered cocoa-nut trees, on the same level as the bindangs, with a solitary hut beside them. On all sides, too, the view is closed by jungle growing in the *sawah* § level, and everything indicates a state of extreme indolence, and an absence of all enterprise or persevering industry.

On my return, I found a cart had just arrived with a barrel of fine spring water from Búkit Chíná, || on the other side of Malacca, for my ablutions. "Well!" thought I, "it is really worth while for once to be the guest of a wealthy Chinese." I had scarcely completed my toilet when my host made his appearance. I should have mentioned, however, that after I came in from my walk, my Singapúr friend K. paid me a visit. I strongly impressed on him the propriety of taking a young Malacca damsel to wife, when he had so good an opportunity; a piece of advice in which his uncle H—— afterwards heartily concurred. The immense disproportion of the sexes in Singapúr is one of its most remarkable, and, in its consequences, worst, characteristics. It is principally owing to the preponderance of Chinese among the inhabitants, the scantiness of the Malayan population in the adjacent territories, and the habit to which so many of the Malacca-born Chinese, the first Asiatic merchants of Singapúr, still adhere, of keeping their families at Malacca. So long as the Chinese husbandmen find it impossible to intermarry with the women of these countries, the permanent agricultural improvement of Singapúr will remain impossible.

After dinner I strolled along the beach towards Malacca. I

* The little compartments into which the paddy plains are divided by embankments for the purpose of irrigation.

† White man: such is the generic term for Europeans and other fair races.

‡ Sandy ridges afterwards more particularly noticed.

§ *Wet* paddy-land.

|| China Hill.

omitted to notice that I found the soil of the paddy-land to be a light-coloured clay, with ferruginous streaks, supporting a blackish mould of a few inches in thickness, which forms the bed of the paddy. This upper soil consists of the clay, thoroughly mingled and imbued with decayed vegetable matter, and enriched in some considerable degree, no doubt, by the droppings of the buffaloes. To what extent this mould may be the effect of cultivation I have not had an opportunity of judging. In my after-dinner stroll I found that the same soils were continued to the sea. The sea, in fact, is gradually eating into the soft clayey plain; the rocky line farther north, running out to Tanjong Kling, causes the encroachments of the sea to assume a crescent-shaped form. A narrow line of reddish sea-sand is thrown up against the freshly broken land, where the clay is exposed to the depth of about three feet. The black mould is, in some places, a foot and a half in depth. I also found some traces of black clay, a good deal resembling that of Singapúr; but both the clays here are much less stiff, and do not seem to harden so much. I came to a sugar-cane field cultivated by Chinese; this cane has a strong, healthy, vigorous appearance, and, with its black mould in which it grew, told strongly against the Singapúr plantations. I returned by the road, and, now that I could look more leisurely on the face of the country, its beauty pleased me very much. There are no hedge-rows, but, instead of them, rows of a curious tree which grows pretty tall, covered with a white bark which seems to be constantly in a state of exfoliation, and hangs round it like an old tattered garment: it has no large lateral branches, and the leaves are small and narrow. The cocoa nuts here are very good; all that I have examined appear to grow out of the same soil as the paddy. I went into a small plantation which I was told belonged to Koon Swee. Some of the trees had at least one hundred nuts on them. His people were busy carting sand from the sea-beach, and spreading it over the ground. I should mention that the soil of the paddy-fields on the Malacca side of Klaebang appeared to me to have a thicker bed of black mould than the tract which I examined on the other side. In comparing the Malacca plains with those of Wellesley Province, it is to be kept in mind that the one coast is exposed to the swell of the Bay of Bengal, while the other is in the middle of a narrow sea 400 miles in length, and at Malacca, not more, I suppose, than fifty in breadth. There is a little island at some distance in front covered with wood, the red (granitic) rock of which is visible at low water.

March 10.—I have been sitting for half an hour on the roots of a senna-tree, now prostrate, from the soil on which it grew having been washed away by the sea. This is the furthest tree of the row on the north side. It is merely united to the

land by the extremities of the landward roots. The clay has been hollowed out below, but the grassy surface is still left. This too has disappeared in some places, and through the roots we look down on the bed of mud which they have helped to retain, and which is washed smooth by the sea. Although the lower part of the trunk is daily covered by the tide, and the greater part of the roots are also exposed to the salt water, the branches continue to put forth fresh leaves and flower-buds. The next tree is also undermined a little inside of the trunk, and is bent down over the sea. The other three in front of the bungalow still stand erect, but the sea is within a foot of their trunks. It was not, however, in examining this invasion of the sea that I was occupied, but in gazing on the line of coast stretching northward to Tanjong Kling, which is exquisitely beautiful. The sea is now smooth, with a gentle ripple. Flocks of white sea-birds skim along its surface or cover the fishing-stakes. A few boats are afloat. The margin of sand is surmounted by one unbroken but irregular wall of trees, among which the senna and cocoa-nut are easily distinguished. The long horn projecting out to Tanjong is opposite me; the morning sun is behind it, and that sweep of trees is bathed in light, and their outlines, as it were, distinctly defined by the white gleaming radiance in which they rest. The nearer portion of the coast is finely marked. The green rounded masses of the senna-trees, the smooth floor of sea-sand partly covered with their shadows, and the white gleam of the mirror-like sea, produce an exquisite effect. One group of senna-trees is particularly striking. A small stream flows into the sea close to me. On its northern side is a small paddy-field, with cocoa-nut trees and huts surrounding it on the land side. I picked up some masses of red granite on the beach, and the sand is evidently formed from this rock. I find on examining the iron-stone that it is very different from the Singapúr ferruginous clay; at least, the specimens here are so, and they are similar to those I observed as we entered, strewed about, marking the walls of the old fort. This rock has somewhat the appearance of a lump of clay from an ant's-hill, being full of chambers. It is quite hard: traces of the yellow-ochry matter, with which these chambers have been filled, are visible. Although at some places in Singapúr a similar appearance is assumed by that called laterite, it generally consists of sharp angular fragments, and, instead of being hard, is of a crumbling nature. Between eight and nine o'clock I went into town: this was the first time I had seen the road by daylight. The first part, near Klaebang, I have already described. For some distance it preserves the same features—paddy-fields, clumps of trees, sea-views, inland rivers (?), &c.—road narrow, no hedges—a Chinese garden, with vegetables, sugar-cane, &c., occasionally. Presently, the cocoa-

nut trees and houses, particularly on the side towards the sea, become more numerous, and at last continuous on both sides. There is much diversity in the construction of the houses (which are for the most part very neat), and in the appearance of the inmates. Hindoos at first predominate. Then we observe a considerable admixture of Portuguese (*i.e.*, Malacca Portuguese), until the road imperceptibly passes into a street, with here a neat Chinese house, by-and-by a succession of old-fashioned but clean and neat-looking Dutch houses—trees more or less abounding—ending in a continuous row of houses, without any gardens, chiefly belonging to Chinese. Some of their houses are very neat and well fitted up. For a considerable part of the way the soil seemed to be the same as that at Klaebang, many of the plantations having merely a top-dressing of sand; but near the suburbs the soil itself becomes sandy. The trees (cocoa-nuts, with few exceptions) had a very fair number of nuts; but in many places—I should say in most—they were not improved by cultivation. I visited the court-house, which is one half of a room in the stadthouse, and heard the new president, Mr. Lushington, give judgment, or *award*, as he called it, in a case. A crowd of Malacca *Jáwí Păkans*, a race of rogues, filled the room. The walls of the stadthouse are very thick. Each window has two little seats in the corners, of solid brickwork, with a wooden top. All the woodwork is of teak, brought from Java. The church is a very plain, old-fashioned edifice, close to the stadthouse. The latter, from its size and solidity, has a particularly respectable appearance, from which its very plain old European style does not detract. There is no semblance of veranda about it; nothing but substantial square windows. About the middle of the day I went out to Pringate, and saw Mr. Salmond. The first part of the road is through low ground covered with a mass of cocoa-nut and fruit trees. The huts are not nearly so numerous as on the way from Klaebang. A very small part of the road is through this ground. It soon crosses the base of a small low hill, the soil of which is nothing but red gravel or pebbles, precisely like those so abundant in Singapúr—on the top and sides of Mount Victoria, for instance. The rest of the road leads over the sides of similar hills: Pringate itself is the same. All these hills are covered with fruit-trees, of various sorts; some are very large forest-trees, yielding fruits. At some places a few cocoa-nuts were to be seen in the red soil, looking pretty well. Although the bottoms of the hills on the left are covered with a thicker growth of trees than the upper part, open spaces occasionally appear, through which the paddy plains are visible. The view from Pringate is very fine; you look down on an extensive and varied landscape—sheets of yellow paddy-fields, with huts, low jungle here and there, hills with masses that of forest, and blue mountains at a distance. Notwith-

standing that the red gravel, of which the hill consists, is of the most barren description, the fruit-trees which are scattered over its slopes have a fine light-green colour, and, though not equal in effect to large forest-trees, give it a park-like appearance, to which some fine cows grazing not a little contribute. Beneath some of the fruit-trees coffee is grown, but the bushes are lanky. I dined with Koon Swee, and again admired the coolness and neatness of the rooms. He put an excellent dinner on the table, partly consisting of European and partly of Chinese dishes. After dinner we drove out, following the road to Pringate for some time, and then turned off to the right and went round Búkit Chíná, another of these red hills which the Chinese use as their burying-ground. This hill is on the right. On the left are fruit-trees in dense thickets. Beyond them a glimpse is obtained, once or twice, of extensive paddy-fields. To the S.W. of this hill rises another, called St. John's, belonging to H——, covered with fruit-trees, and surmounted by a little Dutch fort. We walked up this hill by a very gradual ascent, which becomes rather abrupt near the top. From the fort you look down on the narrow red line of road at your feet, through the branches of old fruit-trees, which cling to its almost precipitous side. The view all round is very splendid, particularly southwards. In front and to the S.W. lies a large tract of cocoa-nut trees. The dense unbroken mass of leaves of a deep-green colour gives an appearance of high health and vigour to these plantations; and, in reality, I understand, they are very prolific, growing out of a soil of mingled sand and black vegetable earth. A small tract of mangrove thicket lies between them and the sea. Behind the cocoa-nuts lie extensive paddy-fields. Huts are scattered over them, but they are without any trees or other vegetation than the paddy itself. A line of scattered fruit and cocoa-nut trees, stretching across the paddy-fields in a southerly direction, marks a road I believe. The plains, as usual, are terminated by brushwood. Mount Ophir rises grandly behind. To the E. the eye encounters an elevated broken country, dark with fruit-trees; and to the N. a plain of no great extent, partly covered with cocoa-nut and fruit-trees and partly by paddy, lies between this hill and St. Paul's, on the summit of which rest the grey walls of the ruined Portuguese church built by Albuquerque. After what I have said of the different roads our drives passed over, it is not necessary to add anything more regarding my general impressions of the scenery of Malacca: as a whole, it is, of all the settlements on the Straits, decidedly the best adapted for agriculture. The large tracts of flat country with a whitish clay or loam, less tenacious than any of the sort I have elsewhere seen near the Straits, and with a surface-soil of dark mould, are capable of being formed into any kind of plantations. Judging from the tracts still in a state of jungle that

everywhere meet the eye, even when walking along the roads near the beach, there must be a great deal of land available for the planter.* The most striking characteristic of the inhabitants is that they have apparently nothing to do. I really saw nobody at work all the time I was in Malacca, if I except Mr. Lushington. There were not many persons in the streets, and those few were lounging about their own doors. I ought to have noticed in its proper place that on Sunday morning a boat crowded with Malays passed in front of Klaebang, slowly pulling towards the town, with musical instruments, a fine-toned gong, and the voices of the joyous Malays uniting in a pleasing air. In the evening I met a long train of Portuguese, men, women, and children, gaily dressed, wending their way back to town from some excursion. I have omitted to mention, as a feature in all the sea-views, the water-islands to the S.W. of the town. They are rocky, but covered with trees. There are some famous Malay krammats, or tombs, of ancient worthies, on them; and at one particular season every year the whole population for days continue to visit them, and pass the joyous time in eating and making merry. I cannot conceive any place better fitted than Malacca to soothe and tranquillize the mind when it has been fretted and worn by the toil and strife of Singapúr. But, without a companion, the somniferous influence of the place would soon unfit one to return to the bustle of the emporium. Of the inhabitants, further than as they appear on the mere surface, I had no opportunity of judging; but I was struck by a sort of knavish and forward look which characterized the *Jáwî Păkans*, who predominate amongst the idlers in town. The view of Malacca from the sea is pleasing. The coast forms a long curve: the green hill of St. Paul's crowned by the ruined church, a few plain European houses along its base, a line of small dingy houses along the beach to the N. of the river, and the continuous cocoa-nut plantations, backed by the mountains of Rumbówi, &c., all make a very pleasing landscape; which I recollect struck me very much when I first saw it on my way to Singapúr two years ago. I was pressed with business during my three days' sojourn, and had no time to make inquiries regarding anything; all I saw being little but hurried glimpses.

11*th.*—I left Malacca for Pínang this afternoon, in the Government steamer *Diana*. The coast, as far as Cape Rachado,† is more or less rocky, and apparently wasting, like that of Malacca.

12*th.*—This morning at six o'clock we entered the Straits of Callam—the route which Captain Congalton invariably follows in

* A European company has lately been formed in Singapúr for the cultivation of the sugar-cane at Malacca. There are some difficulties connected with the landed tenures, which differ from those at Pínang and Singapúr. The subject is at present under reference to the Supreme Government—June 1, 1846.

† *I.e.*, Cleft.

his frequent voyages between Pínang and Singapúr. The Strait is like a large river, or canal. The islands between which it lies are merely flats, and formed of black mud, covered with mangrove thickets; so that it exactly resembles the mangrove creeks which are so abundant in the peninsula and archipelago. For some time we steamed on, seeing nothing but the wall of the thick mangroves on either side. In some places, where a yard or two of fresh sand had been deposited on the margin, young and slender trees, or seedlings, grew up literally as thickly as a crop of corn. Towards the northern extremity of the thickets, one place of considerable extent was quite naked, and covered with flying foxes, which have settled here for many years. At midday we were opposite the Salangór Hill, which seemed scarcely higher than a clump of trees; with a glass, its sides were seen to be covered with cocoa-nut trees, and its summit by a grove of senna trees. To the S. a low mangrove swamp of great extent stretched along the coast. Behind it the country bore an appearance of cultivation; cocoa-nut trees, as usual, taking the lead. To the N. a portion of the coast is rocky. Cocoa-nut trees, and huts among them, are seen in this direction also. Shortly afterwards we crossed a broad turbid tract of a reddish colour, occasioned by the waters of the Salangór river. From this time (one A.M.) till dusk we were in sight of a perfectly flat country, covered with brushwood, and extending a long way back towards the mountains.

13*th*.—At daybreak this morning the Dindings were seen considerably in the rear. On the right, the lofty mountains of Pérák * rise at a distance; the highest of these, Gúnong Búbú, is a fine object in the view from the Pínang hills. Between seven and eight o'clock the eye could occasionally catch the outline of the highest summits of the latter, appearing like a fine filament. It was not till nearly midday that the outline of the island became quite distinct, though still faint. At three o'clock we had passed Púló Kindí, and were abreast of Púló Rímán, with its cocoa-nuts on the beach and straggling up its side, among brushwood, to its rocky summit. The southern face of Pínang lay before us, bold and dark with wood. The S.W. point is rocky and abrupt. Within it, stretched towards us, the long curvilinear sandy beach of Tulloh Kumbar Bay, and the cocoa-nut covered coast of Biyan Lepa separated by a round hill, yellow with lálang and grass. Right ahead jutted out the S.E. point of the island, rocky and hilly like the other. Before we reached this point, the hills of the island, the channel, and the main land had appeared jumbled together in inextricable confusion; so that, familiar as I had long been with the whole from other points of view, I found it impossible to dis-

* Peïráh in Valentyn (*Beschrljving van Oost-Indië*), whose orthography is usually correct.—F S.

tinguish one from another; but, as we entered the channel, they seemed, one by one, to change as if by magic—separating from each other, assuming new arrangements, and altering their outline—till all my old acquaintances looked down upon me with an air of friendly welcome. The feelings with which I gazed on the shifting scene as we proceeded up the channel were many and strong, and I thought this hour had been almost cheaply purchased by two years' absence. I was most forcibly impressed, on reaching the centre of the channel, with the contrast between the low and unattractive aspect of Singapúr and the grand massive character of the island itself, stretching along the channel as a bold dark irregular mountain-wall. When at last the town and harbour, with its shipping, came distinctly into view, the scene became indescribably varied, from its union of so much that is grand with so much that is soft. The channel, landlocked on all sides, shone like a broad glittering lake or inland sea. Nearest to us on the left lay the Bátú Lanchong range of hills, with the quadrangular mount Restalrig and pyramidal Bátú Báyas resting on the Bátú Lanchong range of hills, which sink undulating into the channel. Over this range were seen the Pentland hills, with the peaked summit of Bellmont, surmounted by its bungalow, forming the background of the pass between Mount Restalrig and Bátú Birtam. Beyond Lansdowne and Sans-Souci, northern members of the last range (once covered with clove trees and crowned with their bungalows, but now abandoned to Nature), the north-western or principal mountain group of the island springs up, and continues in a northerly direction, gradually rising till it attains its greatest eastern elevation in Government (or, *par excellence*, the Great) Hill. The face of the Bátú Lanchong range is grassy; grey rocks are scattered over it in abundance, and clumps or tufts of brushwood appear here and there in moist hollows. The steep side of the northernmost range is one dark mass of forest. Lying against it is the partially cultivated hill called the Highlands; its lowest slope covered with nutmeg-trees, and its higher flanks with cloves. A narrow neck of great steepness connects the great range with Mount Olivia, where Raffles laid the foundation of those acquisitions which earned for himself so much celebrity, and might have gained for his country so much advantage. Beyond Mount Olivia, where the house is still standing, is the now deserted Mount Erskine, the low wooded peak of which, resting on the northern channel, forms the centre of the picture. The beach fronting these hills, stretching from Glufor to the south end of the town, is decked by a continuous fringe of cocoa-nuts. From the extremity of this, and on an apparent continuation of the same low line, stretch, in a long narrow zone, the houses and fruit-trees of the town, with the fort and shipping, till they meet a group of low hills on the mainland,

north of the province, thus completely closing in the channel. Above this group towers, in all the majesty of its proportions, Gúnong Jerrai, or Kédah Peak, magnificent from its height, breadth, and sharp serrated outline, and now clothed in its usual blue, misty robe. The long curved sandy beach of the Wellesley Province, with its row of cocoa-nuts, forms the margin of the channel on the right. Behind it the scarcely seen summits of Búkit Jalutong, and the other higher hills on the frontier of the province, seem to lie at the feet of the dim blue mountains in the interior of the peninsula.

20*th.—Búkit Mérah in Wellesley Province.*—Yesterday, at half-past three o'clock A.M., I descended Mount Restalrig. The day began to break as I reached the valley of Pyah Trúbong, and the freshness of the morning air and pleasant recollections rendered the walk to the village of Azer Etam, where I procured a hackney palankeen to convey me to George Town, delightful. In the evening I crossed the channel, pulled up the Paxe river to Bagan Srye, and, guided in the dark by a friendly Malay woodcutter, who was returning to his home at Permatang Pau, but volunteered to prolong his walk, I arrived here at half-past eight o'clock. This morning I retraced my last night's road as far as Permatang Pau, and then struck off southwards. From Búkit Mérah to Permatang Pau is rather more than a mile across the paddy plain, which extends nearly the whole breadth between the rivers Prye and Júrú, or somewhat less than six miles. The Malays are still gathering their paddy, about one-third of the crop being yet upon the stalk. Women and old men are employed in this labour. The produce varies a great deal even in bindangs adjoining each other, owing, probably, to a difference in the care and skill of the cultivators; and in a greater degree in tracts which, from difference of level and other causes, are unequally irrigated. The soil I did not examine closely in many places, but where I did it was a dark mould resting on and partially mixed with clay. There are large tracts where, owing to depression below the general level, vegetable matter has accumulated and is in excess, and other tracts where it is sufficient (deficient?) I was informed by the Malays that almost everywhere on this plain, in digging wells, they come, at the depth of a man's height, to sea-shells, and that sea-mud is the universal sub-soil of the flat tracts. They all appear to be impressed with the belief that the sea formerly occupied the site of their paddy-fields, and that the *permatangs* were sand-banks. There cannot be a doubt that these long bands of sand traversing the clayey or vegetable alluvium of this plain were successively the beaches of the sea; and it is highly probable that some of them at least, before they were annexed to the land or rose above the level of the sea, existed in the channel as banks. As I approached Permatang Pau the soil suddenly

changed from clay to sand, but continued to maintain nearly the same level, and to be used as paddy-ground. On reaching its margin it rose at once a few feet, and was seen stretching away to the right and left at the same elevation above the plain. It is of considerable breadth, and about two miles in length. A public road passes along its centre, and I took that route (the only practicable one at present) southwards. The permatang now forms a most interesting scene, all the population of the plain being congregated on this dry belt. It is, in fact, one large straggling village, with huts scattered over it at irregular intervals, each in its own kampong (enclosure), filled with cocoa-nut and fruit trees, principally the former. The point where it is crossed by the Bagan Srye and Búkit Mérah road is, I suppose, about its centre. Here are several shops adjoining each other on the roadside, an old Attap village mosque, and a pangúlú's tánah.* After proceeding along the road for some time the scene changed, from the huts becoming less numerous, and the cocoa-nut and other trees being entirely replaced by the jangús (cashew-nut), which grows here to an unusual size. Here and there boys were merrily climbing the trees and gathering the fruit, and groups of children were playing under the trees.

Towards the southern extremity of the permatang the huts again thickened till they grew into another village, with a mosque, and shops called Sangé Dúraka Júrú, lying upon a small stream, which marks the termination of the permatang. The road now lay through the open paddy-plain in a nearly straight line for about two miles, exposed to the full heat of the sun, and unenlivened by any huts or trees. It then enters a pass between the two westernmost of three low hills, which run almost due E. and W., and are called Búkit Tangah (*i.e.*, Middle Hill). The lower face and bottom of this little range has a fine appearance as it is approached from the N., being densely covered with fruit-trees of a dark foliage, and large cocoa-nuts. The paddy-plain, on the right or west side of the road I have passed over, is of no great breadth until past the village of Dúraka Júrú, the mangrove swamp of the Púz stretching down in a south-westerly direction, and preventing the extension of cultivation. After that village has been passed, the western boundary of the paddy-plain bends towards the sea, causing the plain to bulge out till it attains a breadth of about two miles from the road. Several small perma tangs, with their usual accompaniments of fruit-trees and huts, were scattered over it. The division of the plain eastward of the road is of considerable extent, forming a somewhat irregular area of more than three miles square. Towards the road every inch is as fully cultivated as the plain on the western side; but nearer to the hills it is studded here and there with forest-trees,

* Chief's estate.

showing that it has more recently been reclaimed from a state of Nature. Some portions also seem to be only half cultivated. In riding from Dúraka Júrú to Búkit Tangah the object which most attracts the attention is the great domed mass of Búkit Moratajam, which appears throughout to be quite close on the left hand, but yet continues to preserve the same apparent distance. The fact is, its base is of great extent, and its flanks come down into the plain over such a large area, that it presents a wide and imposing front throughout the whole circuit from Búkit Mérah to Búkit Tangah. It is above 1800 feet in height.

It was an agreeable change to leave the hot plain at once, and pass into the low defile between the Búkit Tangah hills. On the right a portion of the most westerly hill is planted with nutmeg trees. A Malay woman was at work among them. I asked who the planter was, and she replied "Che Ahmat," and pointed to a Malay man who was busy digging out the lálang at the further end of the plantation. On seeing me he put down his changkul (a kind of hoe, the universal substitute for the spade), and came forward with the courteous, good-humoured, and obliging manner which distinguishes the natives of the Wellesley Province, or, I should rather say, the Kedah Malay, and entered into conversation. He invited me to rest during the heat of the day in his house, and after I had ridden forward and looked over the country to the S., I returned with him. He struck off westward, conducting me along the foot of the hill through a grove of trees to his house, which I found to be quite an uncommon edifice for a Malay, being very neat, and having a pleasant little veranda with Venetian windows. One could not wish to take shelter from the sun in a more quiet and sequestered spot.

I rested here luxuriously for about two hours. No sooner had I entered than one of the inmates hastened to climb a cocoa-nut tree, select a nut, and open for me its secret fountain of the most delicious beverage that a thirsty traveller can drink. We had much talk about the return of Malays to Kedah, the paddy crops, late seasons, my host's own history and that of his family, ending in a geological discussion respecting the oceanic origin of the plain. As a striking proof of this, it was mentioned that a permatang to the E. of Búkit Tangah, called Permatang Bátú, was almost wholly composed of sea-shells, and that shells were found in abundance on the top of Búkit Dúraka Júrú, a low hill a little to the N.E. of Búkit Tangah. I was curious to see this remarkable deposit, and we proceeded to the place, crossing a number of paddy-fields which lie between the two hills. The paddy was strong in general, but in some places had suffered from superabundance of water; it was also not so far advanced as the crops farther N. The hills, for there are two, lie close to the

mangrove thicket, and have been islands or an island at a recent period. The one nearest Búkit Tangah we ascended first. The path lay over an abutment which runs out into the plain in a westerly direction, to the length of perhaps 80 or 100 feet; but of this I could not well judge. Its height, where the path crosses it, seems to be about fifteen feet above the paddy plain. The top, so far as I examined it, was wholly composed of modern sea-shells lying very close to each other, and embedded in a stiff blackish soil. At one or two places I noticed points of granite rock protruding. We descended the other side of this abutment into the hollow between the N. and S. hillocks, which is covered, as is the side of the southern hill, with fruit trees, chiefly magnificent dúreyans,* of a height I do not recollect to have elsewhere seen. We then ascended to the top of the southern hill, which is composed of large rounded granite rocks. On the southern face of the other hill there is another plantation, or kampong, belonging to an ex-*panghúlú* † *mokím*. This plantation, to judge from the appearance of the cocoa-nut and other trees, must be very old. A road leads from this kampong through the mangroves to a creek, which, taking its rise in the paddy plains to the N., bends inland to this point, and then pursues a N. direction to the Júrú river. Boats of six kóyans ‡ burden ascend to this place. At the bottom of the eastern side of the northern hill are immense rounded and flattish granite rocks, with deep hollows between them, strewed over a considerable space. They are far too large to have descended the slight declivity of the hillock, nor could the force of the rain pouring from it have washed away the earth and disintegrated the surface of the hillocks; so that there cannot be any doubt that this has been the work of the tides and waves of the sea, which do not now approach within a mile, save by the creek. We returned to Che Ahmat's, and after resting another hour I returned leisurely to Búkit Mérah. On the way I dismounted at Dúraka Júrú, where a number of Macao Chinese are settled as paddy-planters. They were busy cleaning the paddy, which they did with more rapidity than the Malays, having winnowing-machines, &c. They are chiefly renters from the Malays, but some possess lands of their own. The soil of Búkit Tangah is a coarse granite. Che Ahmat had dug a well and a tank on his ground, the former of considerable depth, and, so far as I could see (to the depth of eight feet or so), the soil was uniform. Water is found in abundance all round the hill, on digging to a small depth. The surface, from the prevalence of quartz, is coarse and unfruitful. The hill was formerly cleared for pepper, but, with the exception of its lower part and the piece cleared by Che Ahmat, it is overgrown with lálang, and

* Durio Tibethinus, Linn. † Appointed head man.
‡ 1 kóyan = 48 píkul = 6400 lbs., nearly 6 cwt.—F. S.

towards the top with low brushwood. In the evening I crossed the plain from Búkit Mérah to Permatang Pasír, and struck across it to Búkit Jalútong, which is composed of the same rock and soil as Mérah. The colour varies considerably; at its N.E. corner it has a redder hue than on the side directly facing Mérah; a fine white clay, exactly resembling it in everything but colour, is also found there, and some other intermediate colours, such as yellow, pink, &c., resembling in this respect, as well as in the alternate shades of colour, the clay strata of Pearl Hill near Singapúr. The clay is so fine in its particles, and imprints itself so readily, that it may be used like chalk or slate for marking. Its mark has the colour of the clay, except some of the tawny stones, which give a red streak. Strewed along the foot of that portion of the hill which they are at present clearing, were some large fragments of a harder rock, nearly approaching in appearance some varieties of laterite, particularly from its dark or blackish colour, but it yields a red streak, similar to that of the soft clay mentioned above. Near the surface also, particularly in the section on the upper side of the road, which Colonel Low is at present cutting along the northern base of the hill, there is an irregular layer of indurated gravelly stone, exactly resembling such as characterize some hills of laterite. The surface of the higher part of Bûkit Mérah is full of this gravel. These indurated blackish fragments and gravel are doubtless the clay of which the hills consist, metamorphosed in different degrees by volcanic action and a greater elevation, and having been ejected through fissures whose courses would probably be exposed, were sections made in the shape of dykes and veins, as is often the case in the Singapúr hills. These hills may be considered as members of the semi-volcanic zone of the Straits of Malacca.*

* "In coasting along the W. shore of the peninsula from Pínang to Cape Rachado, a high chain or rather series of ranges of mountains is observed inland nearly the whole way, which, from their generally sharp-peaked summits, the nature of the detritus brought down from them by the rivers, and the evidence afforded by the few points which they have reached, we are justified in believing to consist in great measure of plutonic rocks. In front of this range we discern a broad tract of country, often appearing to be perfectly flat, and very little above the sea-beach for miles together; from which sometimes low hills rise like islands out of the sea. These hills are frequently quite solitary, and at a great distance from the central mountain, or near the coast. Farther inland they seem to be generally in groups, and towards the mountains the country in some places appears hilly and undulating. At Malacca these low hills are occasionally so much grouped as closely to resemble portions of Singapúr, and they are covered by pebbles and scoriform and altered fragments of rock precisely similar to those found on some of the Singapúr hills (which I believe in every case to be related to volcanic fissures of eruption, opened contemporaneously with the elevation of the hills). In some of the hills opposite Pínang I observed similar fragments. In both cases the soil had a deep-red, ferruginous aspect. Cape Rachado is described by Crawfurd as consisting of quartz rock interspersed with frequent veins of clayey iron ore. That most of the hills scattered along the western plains of the peninsula were islands in the

At the point of Búkit Jalútong, on the side which I visited, the sandy soil of Permatang Pasír commences. On this plain, about twenty feet from the foot of the hill, a well has just been dug. At a depth of three feet from the surface there is a bed of white clay of the same texture as the rock of the hill. On the face of the hill there are some coffee-plants, but from want of shade they do not flourish. The vegetation on these red clayey hills is distinguished by its dark-green hue. The nutmeg-trees with which Búkit Mérah is covered are decidedly the finest in the three settlements; their dense dark foliage gives them indeed, an aspect quite peculiar. Unlike Búkit Tangah, these hills have no springs. The soil is of a loamy clay, and entirely similar to the finer marls (not calcareous) of the Devonian system; it is of a deep red colour, whence the name of the hill—*Búkit Mérah*, *i.e.*, Red Hill. When dipped in water it rapidly falls away into a fine powder. Similar soils in England are very fertile, and produce rich crops of all sorts. Besides the volcanic pebbles and fragments, small pieces of quartz are found interspersed among it. The hill is about four miles from the present coast of the province. "From the steep scarped appearance of its seaward face (or that which must have been opposed to the waves rolling in from the Bay of Bengal) and its general configuration, it may be inferred that a considerable portion of it was washed away by the sea, and its existence as an island continued during a long period subsequent to its elevation." *

The contrast between the frank simplicity and humour, harmonizing well with a certain grave, dignified self-possession and genuine politeness which characterize the manner of the Malays of Kedah, and the bravado, sinister, and impudent bearing of the insular Malays at the southern extremity of the peninsula, is very remarkable. The former, though polite, distant at first to Europeans (as a class either too repellant or too rudely obtrusive in their manners to commend themselves to the good-will of the Malayan peasant, who, beneath his often unpromising exterior, conceals a lively sense of his own honour, and respect for that of others), are no sooner addressed in their own language with good humour and courtesy, than all reserve disappears, and is replaced by the most obliging communicativeness. The latter, on the other hand, are, in general, saturnine or impertinent, and answer

sea at no remote period, there can be no doubt. The plains from which they spring are flat, generally only a few feet above the level of the sea, alluvial, and in some places abounding in marine shells of the same species as those at present found in the straits."—"On the Local and Relative Geology of Singapúr," &c., by the writer.

* From a paper by the writer "On the Strait of Malacca and the Alluvial Plains on its Borders."

inquiries with a degree of suspicion and dislike which forbids any profitable or genial intercourse with them. Thus, while the agricultural Malay of Kedah makes one of the best companions in the world, the maritime, and most frequently semi-piratical, Malay of the southern islands, proves about the worst. The Wellesley Province, during the few days of my sojourn at Búkit Mérah, wore an aspect of abundance and general hilarity that Arcadia might have envied. During the harvest-season an unwonted excitement and a livelier geniality pervade the breasts of the Malays. Their hearts open to each other, and are more deeply impressed with thankfulness to the unseen powers, and to *Tuwan Allah*,* whose ministers they are, for having heard the invocations with which they sowed the seed, and caused the food of man to be again plentiful in the land. Hence they begin the harvest with religious observances; and, as their houses become filled with paddy, give vent to the general gladness in musical and dramatic entertainments. During the whole evening the sound of the *wáyang*, *máyong*, and *máyín mandrah* from the villages around reached Búkit Mérah; and on awaking before the dawn, I heard it still prolonged.

I was informed by several Malays at different places that the crops of paddy had been inferior for some years past. The rents appeared to average three dollars an orlong (a square measure equivalent to about an acre and a third). At the large Chinese establishment at Duráka, I was told that the farmer, like other Chinese engaged in the business, owned some lands himself, and rented the rest. In this quarter the rent is generally four dollars. At the time of my visit the attention of European capitalists was much attracted to the province in consequence of the Supreme Government of India, after for some years resisting the solicitations of the merchants and planters of Pínang, having, under instructions from England, placed this settlement on the same footing as Bengal with respect to the importation of sugar into England. A sudden impetus was thus given to the cultivation of the sugar-cane, which had hitherto been carried on at a great disadvantage; and some planters seemed inclined to purchase paddy-lands for making sugar plantations, rather than clear waste tracts for that purpose. The Malays in the neighbourhood of Búkit Tangah had been too long inhabitants of the province, and had formed too many family connections, to be willing to sell unless at high prices—perhaps thirty to forty dollars. Those at Sangí Susat were selling out, in order to return to their native country, Kedah, at ten to twenty dollars per orlong. In the vicinity of Búkit Mérah, the rents were paid in kind at rates from

* Or *Túhan Allah—i.e.*, Lord God. If they believe in any other unseen powers, that part of their creed is a relic of the idolatry of their ancestors.—F. S.

four to six *nálihs* per orlong.* The produce per orlong varies greatly, so much as from one and a half to five *kunchas*. The value of lands and rents has fallen considerably of late, owing, in some measure, to the too rigorous exaction of assessment (a new burden, to which the Malays were strangers, and which they could only regard as a second rent in addition to the quit-rents reserved by Government with their grants), but principally to the old Malayan chiefs having been allowed by the Siamese to return to Kedah, whence they were expelled under circumstances of great treachery and diabolical cruelty in 1821. The Chinese (from Macao) are increasing in number. They plough the land better than the Malays, and get heavier crops. At Duráka I found from forty to fifty Chinese engaged in cultivation of paddy, about eighty at Pau, as many at Paoyo, twenty to thirty at S. Susat; in the neighbourhood of Búkit Tangah there were about eighty, but there they plant sugar-cane, cloves, &c.

The river Prye, as far as I went up it on this occasion, and much farther, even beyond the limits of the province, is a broad and deep salt-water creek, in the middle of a belt of mangroves. The Malays informed me that the head of the creek is at the Labu Buting, where a small stream runs into it. Its proper name farther up is the Súngaï Kálím, and it has two tributaries, the Súngaï Jara and Sungaï Labu Marijam, or Súngaï Báru. The course of the creek is very winding, and at some places it touches the dry plain. One of these places is at Bagan Srye, on the left bank, where it is washing away the land.

20*th*.—This morning I again rode to Búkit Tangah, and thence southwards. Beyond Búkit Tangah the country changes from a flat alluvial plain to an undulating sandy track. This is succeeded by a broad level belt, of which a small portion on the N. side, above the level of the sea, consists of a whitish clay, with streaks of red, and is cultivated as a sugar plantation by Chinese. Next comes a swamp covered with mangroves, and the southern margin of the belt is washed by the Juru, here flowing close to low hills of pure white sand, at least on the surface in no way differing from that on the sea-shore. The mud of the swamp spreads over the sand at its border. For some distance beyond this the country is undulating and sandy. It is in the southern districts of the province that the great field for sugar-planters will be found for some years to come. Many eligible tracts for

* The Malayan corn-measures universally used in the province are the

Kal . .	4	of which =	1 Chupak
Chupak .	4	„	1 Gantang
Gantang .	16	„	1 Nálih
Nálih . .	10	„	1 Kunchah
Kunchah .	5	„	1 Kóyan

Kóyan, which weighs about 60,033 lbs. avoirdupois, according to Colonel Low.

plantations exist between the Juru and the Prye, and in the great paddy-plains to the N. of the latter river; but planters look to immediate profit, and would find it impossible within any limited time to buy up, from the numerous native holders, a piece of ground in one place sufficiently large for their purposes. The paddy-lands are, for the most part, subdivided among their owners in pieces varying in size from fifty to two or three orlongs.*

After passing a month in Pínang, a great portion of which was employed in exploring one of the mountain ranges, described at some length in a paper communicated to the Asiatic Society in Bengal, I left it with much regret. The exceeding magnificence of its mountain views, the richness and variety of their component parts, and the coolness and transparency of the atmosphere which this country enjoys, give a freshness and elasticity to the mind never experienced in the sultry plains of India. I have now explored nearly every part of the settlement, and hundreds of scenes most interesting and dissimilar have rewarded my toil. It is almost inconceivable how Nature, in so small a compass, has contrived to crowd such a wonderful diversity of objects. The old mossy rocks, fir-trees, and ferns of the higher hills, beautiful and odoriferous flowers which adorn all the forests in spring, the deep ravines lined with dense and picturesque shrubs, in the rocky dells of which the streams force their way; the gloom of the more gigantic and yet unscathed forests, haunted only by wild animals, where silence is broken only by the melancholy cries of the apes and the notes of birds never heard in inhabited districts; the slow winding rivers, generally solitary for miles together, but sometimes bearing the light prahus (barks) and flowing past the kampongs of the Malays, are but a few of numberless and infinitely varied scenes and objects which make a delightful and indelible impression on the memory.

* During the last twelve months several new plantations have been commenced in the southern districts—two on the Juru, four in the central part of those districts, in addition to three which had been formed at the time of my visit, and two on the Krían River, June 1, 1846.

II.

THE ROCKS OF PULO UBIN,

WITH SOME REMARKS ON THE FORMATION AND STRUCTURE OF HYPOGENE ROCKS AND ON THE METAMORPHIC THEORY.

By JAMES RICHARDSON LOGAN.

["Verhandelingen van het Genootschap van Kunsten en Wetenschappen," vol. xxii. Batavia, 1846.]

PULO UBIN is an island lying in the strait between Singapore and the coast of the Malayan Peninsula, of which the eastern extremity faces the entrance of the Johore river. It is about five miles in length, with a general direction from E. by S.E. to W. by N.W., and has a varying breadth from a mile to three-quarters of a mile.

In detailing the results of four or five visits which I have made to it within the last few months, I shall first endeavour to convey some conception of the distinctive aspect of the island, or that which would strike a stranger; and this object will be best served by giving my own first impressions as they were written down at the time in my journal, even although they embrace some ideas that were afterwards corrected by a wider survey. I shall next describe the rocks of the island, so far as I have observed them, noticing slightly the scenery where it is most remarkable for its beauty. The concluding portion of the paper will be occupied with some deductions from the preceding details, a notice of the relations between the island and the adjacent localities and some remarks upon its bearing on geological theories current at present.

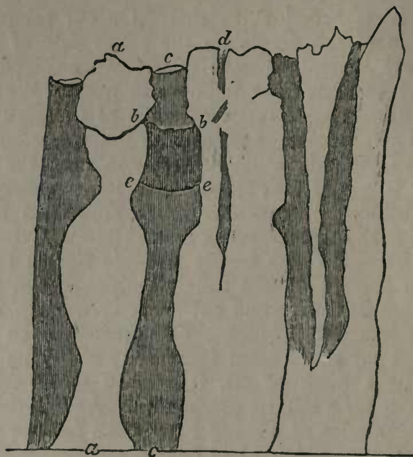
To begin, then, with the impressions made by the first sight of the island. I crossed from a small Malayan campong on the coast of Singapore opposite Pulo Ubin, called Passier Ries. There is here a deep indentation in the Singapore coast, or rather two hilly and wooded points (Tanjong Changy and Tanjong Pongal) advance from it towards each extremity of P. Ubin, and include, with its southern shore, a noble sheet of water about three miles long and two miles broad, save at its extremities, where it is contracted between the Points and P. Ubin to straits of about one mile in breadth. This island-fronted bay must originally have been much greater on the Singapore side, as the creek of Sirangoon winds through a broad expanse of mangrove jungle, and terminates in a swampy valley, the whole of which has been accumulated on the old sea bed. As we left Passier

Ries, the strait, land-locked on all sides and smooth on its surface, appeared like a lake amongst low hills. It is seemingly quite surrounded by jungle, the mangrove predominating wherever there has originally been a deep indentation in the shore. On the north the opposite side of the Old Strait of Singapore (Salat Tambroh) is completely excluded from view, save at one point, by P. Ubin, which shows like a densely wooded low hilly range. A broad bay on its shore is nearly filled by a low flat island, or mud bank, called Pulo Tam (properly Ktam), which is covered by a thick sheet of green gleaming mangroves. We stood across the strait towards this island, passed its eastern extremity, and then proceeded eastward along the shore of Pulo Ubin. Several rocky points slightly project from it, and these are covered with trees of no great size, but which, from their not being so densely crowded as tropical jungles generally are, unite luxuriance with grace and freedom of growth. The abundance and abruptness of the rocky masses which are partially visible, clothed with mosses and lichens and with shrubs rooted in their clefts, prevent the trees from approximating, raise their trunks here and there into view, and, by limiting their number as in an artificial wood, afford space enough above for the branches to expand into full-leaved wide-spreading canopies, on the dark and cool shadows of which the eye, dazzled by the radiance of the sea, wishfully lingers. The rocks are, however, less seen themselves than by these their effects, for such is the profusion of shrubs, underwood, creepers, and parasites of various sorts, that the dead mineral masses seem to be imbued with botanic fecundity, and wrapped in a living garment woven out of their own breasts. The little bays between the Points are nearly obliterated by level sheets of mangrove, which, by their growth externally, tend constantly to convert the original irregular into a straight coast line.

One of the most striking features of the lake-like scenery of the strait between Pulo Ubin and the Singapore shore is Gunong Bau, a broad pyramidal hill, which, as we approached the eastern extremity of Pulo Ubin, and the wide estuary of Johore river on left or north-east, and the wider mouth of the old Singapore strait on the right or south-east, gradually opened—was seen up the former at a distance of five or six miles. Although termed by seamen Little Johore Hill, it is in reality higher than Marbukit or Johore Hill, which forms one of the most prominent landmarks on entering the Straits of Singapore from the China Sea. From the regularity of its cone, which from this point of view seems to descend with almost perfect evenness on all sides to a level a little above that of the sea, and its apparent isolation, it resembles a volcanic hill.

We stood across the strait between Pulo Ubin and P. Tikang

to the small islets called P. Sejahat. On our return we pulled close in to one of the points on the south side of Pulo Ubin, where there are several Chinese quarrymen engaged in splitting granite for the supply of the builders in town. We were struck by the extraordinary appearance of some of the granite rocks on the beach. Their sides were grooved or fluted, presenting regular vertical furrows and ridges. A little way in from the beach, and on the lower face of a hill, stood a very large rock, of which two faces were visible, the remainder being concealed by luxuriant jungle, and the summit overhung with shrubs and trailing plants. At a little distance it was hardly possible not to take it for a portion of an ancient temple rudely sculptured out of the solid rock, since from its front stood out what seemed to be a range of colossal misshapen images. On ascending to it through the brushwood my amazement increased; for while it was too irregular to be a work of art, it seemed to be too close an imitation of one for a natural production. Amidst the jungles of the granitic mountains of Pinang I had been familiar with all the shapes and positions which I had considered detached masses of that rock capable of assuming. I had there seen it in solid boulder-like blocks of vast size, sometimes cubical and sometimes approximating to globular. I had also seen it in smaller blocks piled one over another with all the regularity of Druidical masonry. But I had never seen or read of granite carved by Nature after the fashion of the mass before which I stood. In the perpendicular face of the rock were scooped out, from top to bottom, deep concave hollows or grooves varying in breadth and depth. Between these the rock projected in huge unshapely columns like a row of rude idols. Towards the top these pillars were rounded. In some a slight curved groove or fissure crossed the upper part, the convexity being downwards, and thus converting the summit into a globe resting in a cup. Below the line of the fissure the pillar contracted very much on both sides, as if it had been at this place scooped evenly out. It then bulged out on both sides, but much more on the left than the right. The sides next converged, and, lower down, approached more rapidly. They then bulged out again till the soil hid the rock from further view. In some of the columns the curves of the sides assumed the form of a vase. The bottoms of most of the hollows or channels between were nearly uniform in depth, although somewhat uneven or conchoidal. Of these singularly shaped columns five or six had a close resemblance to each other. When viewed from the side they were all seen to be scooped quite round at the places where in the front view they contracted, so that their edges appeared thus:



In this figure *a*, *a*, is the last of these pillars. Beyond it to the right the regularity is broken, and the grooves appear as in the shaded portions of the figure. The groove on the right of *a*, *a*, marked *c*, *c*, is a remarkable one. The upper part has a regular semi-cylindrical shape. At the line *b*, *b*, it abruptly, but with all the regularity of art, slopes inwards at a sharp angle, so that the part darkly shaded forms a cavity apparently about five feet in depth. A slight groove, an inch or two in depth, is shown at *d*, and deeper grooves appear further along. The pillars, whose side view is as above, are on the other side, or to the left of *a*, *a*. Ascending the hill, I managed to clamber to the top of the rock, where I found the grooves to be partially prolonged on the surface in an inclined direction. The surface at some places was hollowed into cup-like depressions. Climbing further up the hill I came, at no great distance, to another rock of much larger dimensions. It was reft or traversed by a chasm from six to eight feet broad. The sides of the chasm were much fresher than the external surface, and the mass had evidently been split across at a time subsequent to its existence as a separate rock and the formation of the grooves with which it also was traversed in front. The extremity of one of the two masses projected for some distance over the sloping ground so as to form a capacious cave. At another side a larger fragment had fallen from the rock and lay against it. On its surface was a cup or rather spoon-shaped cavity about two feet in diameter and one in depth. At another place a second projecting rock occurred, forming another cave, about thirteen paces in length. The entire length of the

rock which thus projected seemed to be about forty paces. On the same side there were numerous grooves, some not exceeding a few inches in depth and breadth, others above two-and-a-half feet deep and about two feet broad. One groove I observed about six feet deep and two feet broad, with small secondary or inner grooves fluting its surface. While examining this rock a heavy shower of rain began to fall, and as my time was exhausted I was obliged to leave before I could make more precise observations or any measurements, and, in truth, before I had recovered from my first sensation of wonder. It appeared to me that the rock must have been split on being elevated from a lower level. On returning I observed many smaller rocks near the beach with channelled sides. On the top of one of these there was a long deep trough, with small grooves converging into its upper end, like the ribs of a fan. The rest of the surface was covered with slight depressions.

I believe this is the first time that grooved rocks have been observed so close upon the equator. Their absence has been considered an argument in favour of the glacial theory of the boulder formation. None of the channels or grooves, however, which I observed resemble the parallel inclined or approximately horizontal furrows which are caused by the motion of glaciers in descending the rocky trough of a valley. But they appear to correspond strikingly, save in being vertical, with the giant cauldrons, passing into long deep grooves, which are described by Agassiz as being produced in the Alps and Jura by streams of water falling over the sides of chasms in advancing glaciers, and acting as a locomotive erosive force upon the subjacent rocks. My hurried and restricted observations hardly warrant a conjecture as to the probable origin of the Pulo Ubin grooves. The idea that occurred to me on the spot was that the several rocks, before they were shattered and separated by the force which placed them in their present positions, and in some different local distribution of land and sea from that which now prevails, had formed the site of a cascade of no great force, which had gradually worn the sides of the rocks into channels. A succession of falls would account for the relative positions of the rocks with respect to each other, and for the spoon-shaped hollows on the surfaces of some of them. It appeared to me that ordinary meteoric erosion and decomposition were totally inadequate to explain the shapes and size of the grooves. In many places they are overgrown with mosses, and in some, if not in all, they are prolonged beneath the ground, and thus protected by the soil of the hill, which must have covered them for a considerable period, since large trees are rooted in it. The aspect of the rocks is not such as rapidly disintegrating granite wears, but, on the contrary, resembles that of an ancient building. I could

find no trace of any fissures coinciding with the direction of the furrows. Yet there can be little doubt that, to whatever agency they may be referred, the grooves were first opened along lines where the cohesion of the granite was comparatively weak. The regularity with which the projecting columns of the rock first noticed are scooped round at two places across the direction of the grooves, seems to prove that the granite has an internal arrangement similar to that so frequently observed in this rock, and which causes it to be shattered into blocks more or less cubical. In one of the lower rocks which the Chinese are quarrying we found two parallel vertical veins traversing the entire rock, so as to include between them a plate about an inch in thickness. One side of this plate sparkled with metallic grains of a golden hue (iron pyrites). The other was covered with a rusty stain, resulting probably from the fissure on that side having been permeable by the air and the consequent decomposition of the grains.

As we pulled away from this place and looked back, even the want of light and shade, and the heavy rain that was falling, did not prevent our acknowledging that it possessed a character of picturesque beauty of a very pleasing and uncommon kind. It, in truth, united the luxuriance and gracefulness of tropical vegetation with the open and irregular aspect of a wood on some river's bank, half rocky, in England. The jungle trees of Singapore do not in general attain sufficient size to assume that air of grandeur which distinguishes those on the Pinang mountains, and they are so blended with the underwood, which grows up like a thick crop of rank weeds between them, and so interwoven by creeping and pendent plants into a dense mass of green, that their individuality is extinguished. The display of botanic life is wonderful in its measureless, all pervading exuberance, and this very profusion ministers to a deeper sense of the silent, soft, spirit-like, but most potent and most motley, power of vegetation. Still no tree or humbler plant invites us to dwell delightedly on its own perfection. At this spot, however, many stately trees rose up in self-dependent strength and beauty, and expanded in mid-air into their complete proportions, or, if they sought companionship, they did not woo a promiscuous throng, but each embraced a single partner. The number of double or married trees congregated at this particular spot was indeed remarkable, and, recollecting that the Hindoos either select the neighbourhood of such trees as the sites of temples or plant them where they do not grow naturally, and that, in those ages when they flourished over the Indian Archipelago, the strait between Pulo Ubin and Pulo Tikang was the portal of one of their earliest and most renowned colonies, Zaba on the Johore river, it was again difficult to avoid surrendering the mind to a belief that the grey pillared and fluted piles, that assumed more

and more an artificial appearance as each stroke of the oar reduced their size, were really the remains of some great fane overborne by many centuries of desolation.

It will be borne in mind that the above are first impressions, and that, having been conducted to one particular locality to see the furrowed rocks, I believed they were confined to it. My next visit undeceived me, and proved that I had been nearer the truth when looking for tokens of an internal structural arrangement in the granite, than when conjecturing the former existence of a cascade, a conjecture which a wider exploration of the same point would have shown to be baseless.

I now proceed to notice the rocks at the different places which I have visited, beginning with the eastern portion of the southern coast after passing the quarries, going then to the western division of the island, and finally returning to the point where my desire to examine the island was first awakened.

The seaward extremity of the lateral hill or ridge to the east of the Chinese quarries is environed by mangroves.

The succeeding point advances out of the mangrove fringe. At the W. side a large mass of solid granitic rock of a greyish colour, varied by light brownish red (and consisting of grey felspar and transparent quartz with some black mica interspersed) stretches transversely along the beach, from which it rises a few feet. The beach at its base is a band consisting of the upper edges of soft semi-decomposed vertical laminæ. Further on another mass has its face composed of solid, slightly projecting nuclei of different shapes, with laminæ between. The nuclei are similar in composition to the preceding rock, but in the laminated portions the black mica is so thickly interspersed as to form about a third of the whole. A quartzose vein about an inch in thickness traverses the face of the rock, cutting through both the solid and laminated portions. Beyond this extended tabular rocks occur, along the flat surfaces of which fissures and divisional lines run in a direction N.E. by N. to S.W. by S. A portion of the surface is covered with a ferruginous vesicular crust, volcanic in appearance. The next considerable rock is a ledge running out into the sea, about thirty feet in length and six to eight in breadth. A portion of it is marked by a network of contemporaneous veins of a larger grain and more micaceous than the body of the rock; at some places the veins send tongues into the latter. This structure is analogous to that which the more decomposed rocks, consisting of solid nuclei and laminated curved bands, exhibit.

Along this coast wherever the junction of the rock with the superjacent soil of the hill-side is visible, there is, in general, an irregular band of angular fragments of the former partially intermingled with the latter, evidently resulting from the slowly descending disintegration of the rock; at some places, however, a

layer of rounded pebbly stones is interposed between the broken surface of the rock and that of the soil. An example of this occurs here. The pebbles are chiefly of three sorts—a porcellanous rock, probably semi-decomposed granite and syenite, brownish red ferruginous rock, and jaspideous. The first is by far the most abundant. On the beach in the vicinity are numerous pebbles of the same description, and also some rounded scoriaceous stones similar to those which are so common in Singapore.

As the S.E. angle of the island is approached, regular spherical nuclei with concentric spherical laminæ are found. The most remarkable point in the character of the rock where it assumes this structure is the abundance of black mica, which indeed constitutes the entire mass, with the exception of a little felspar which serves as a basis. It is to this circumstance that the tendency to this peculiar arrangement of the crystals is in all likelihood owing. The predominating rock around these laminated micaceous globes is greyish and faint greenish quartzo-felspathic, with minute particles of mica and hornblende interspersed. In decomposing it takes a rusty colour. It is obvious that the weathering of such globular foliated portions of a compact rock, in situations where the whole was less preyed on by the sea, would give rise to cups and spoon-shaped cavities on the surfaces of the more compact masses, and that rows of such spherical portions gradually excavated would ultimately assume the appearance of grooves like those formerly described.

The S.E. point has at one place the appearance of having been subjected to the action of heat since the rock was formed. The sides of cleavage fissures have a blackish brown ferruginous hue, and a thin hard laminæ or seam having the same character sometimes fills them. Some veins of a similar substance are vesicular. I believe, however, that this appearance has resulted solely from the iron contained in these portions of the rock. Close to this is a band, about eight feet in breadth, of vertical laminæ half decomposed and with crustated projecting edges. Internally it is composed of crumbling felspar having minute scales of mica scattered through it. Towards the surface the hue is rusty and some deep black stains occur throughout.

Near the point the rock exhibits great variety in its composition even within a small compass. One specimen has a greenish-grey saccharoid felspathic base, in which crystals of quartz and nests of mica are sparingly disseminated. Another is somewhat similar, but the base is a dark brownish grey. In others whitish felspar, and black mica and hornblende are united in different proportions, equal and well separated, or more finely granulated and mingled, so as, when the mica is absent, to approach to the character of a syenitic greenstone.

Among the other interesting examples of varying structure and

composition at the Point there are some solid blocks of a rudely globular shape, with the rock in the spaces between in foliæ from one-sixth to one-eighth of an inch thick. Adjoining these are some blocks, which, within a circuit of a few feet, change in their appearance and composition, passing from a black doleritic rock into a well-crystallized compound of hornblende and felspar (syenitic dolerite)—in which the former is greatly in excess—into a similar rock in which the felspar greatly increases, and which at one place is intersected by a rhomboidal network formed by felspathic veins crossing each other, and lastly, into a whitish grey rock similar to that around the globes before noticed. The crystallization between the opposing convex sides of adjoining blocks exhibits yet another and still more strongly marked variety, becoming abruptly very coarse, so that some of the specimens which I took from the line of junction have, on one side, either a granite as minute in its granulation as fine sandstone or a compact dolerite, and, on the other, crystals of felspar and scales of mica of an unusually large size.

A little beyond the S.E. angle there is a band of semi-decomposed rock about two feet broad, consisting of small globular and cuboidal bosses, from three to six inches in diameter, of a very fine grained granite or eurite imbedded in and protruding from yellowish white clay. The former are composed of minute micaceous and hornblendic grains thickly disseminated in a base of granular quartz and felspar. It so strikingly resembles fine ground pepper, especially after decomposition has commenced, that it may be called pepper granite. The latter has originally been in great measure felspathic.

At the S.E. point the slight superficial depressions marking divisional planes, the principal fissures and chasms, and the longer sides of separate ledges, are all in N.E.–S.W. lines, or lines not deviating far from these directions. The first have given rise to the two last. The cohesion of the rock at the divisional plane, originally least, is further weakened by partial decomposition along that line. The alternations of temperature from exposure to the rays of a burning sun succeeded by immersion under the waves, and the removal of support on either side by the mechanical action of the sea, cause the rock to split along the plane, and thus a fissure is formed. A ledge or band between two fissures is either broken up mechanically by the waves, or wasted away chemically from being more susceptible of rapid decomposition than the adjoining bands, and thus wider fissures or chasms are produced.

There is a small rocky islet or group of rocks near the S.E. point of P. Ubin called S'kodo, from a fancied resemblance of one of the blocks to a frog. Those in the middle are large and connected by sand, in which some shrubs grow, and those scattered

around are smaller and much worn by the waves. Some large rocks also lie in the sea on the south side of the central collection, and the longer sides of those run S.W. by W., N.E. by E. Parallel reddish lines or bands about half an inch broad traverse the surfaces and mark the planes of weaker cohesion. The sides of some of the blocks are peeling off in parallel layers. In some, another set of divisional planes, transverse to the former, are well marked. Where the rock is breaking down, these two systems of planes divide it into rhomboidal fragments.

The rocks are of a large grained granite, and are in fact the best specimens of well-marked and regular granitic crystallization that I have seen around Pulo Ubin. The hornblende, instead of being collected in nests of small granules intermixed with felspar, or disseminated in minute particles, as is generally the case even in the most highly crystallized rocks of the island, is here in well-defined crystals of various sizes, and mostly of a fibrous structure. Mica is present of a fine lustrous black colour with a faint blush of red. Nests occur from an inch to a few inches in diameter, composed principally of finely granular hornblende intermixed with a lesser proportion of felspar, and containing occasionally a crystal of mica.

The eastern end of the island, in place of contracting to a mere point like the western, presents a coast of considerable extent. This arises from the eastern portion of the island, consisting of two hill ranges, with a flat mangrove tract between them. The termination of the northern range constitutes the N.E. point. The beach is composed of extended tabular masses of rock, which slope curvately beneath the sea, and rise only a few feet above it. They are crossed by fissures and small grooves, the direction of several of which is S. by S.W. All the principal lines have a general direction towards S.W., although they vary within a small range. In these a row of circular cavities lined with a ferruginous crust sometimes occurs; and where this is the case, the surface of the rock has a semi-calcined aspect.

The rock varies, but is principally composed of an opaque bluish grey saccharoid felspathic and quartzo felspathic base, enclosing crystals and grains of hornblende, and translucent crystals of felspar. It bears a close resemblance to a specimen of Vesuvian lava including hornblende crystals which I possess. In some places it becomes compact, or the hornblende granules are so minute as to appear like fine black dust sprinkled on snow. Where they prevail over the felspar the rock has a bluish colour. The base has frequently a reddish brown and brownish grey colour; but this is probably the result of incipient decomposition.

Rounding the point and proceeding westward along the northern coast, the rocks preserve the same character. They are traversed here and there by rifts, and marked by fissures or grooves

of a greater or less depth, but mostly shallow. Where I noted the bearings of the divisional lines, those producing the rifts on the faces of rocks sloping abruptly into the sea were found to be either nearly S. or S. by S.W., and dipping easterly. Those producing the slight grooves crossed the others, dipping to the westward, and with a S.E. bearing. Another system traversed the faces of the rocks in a horizontal direction. The action of the weather and the tides had deepened many of these fissures, so as to form an irregular system of shallow channels. The rocky shore to the south and west of the point is, like all the other projecting portions of the coast, the base of a hill. Off its western extremity (which is separated from the eastern by a small tract of mangrove, and is, perhaps, a distinct hill), there is a large insular rock. The external form of this islet is very plainly due to the divisional planes of the rock. Of these the principal are parallel to its N. and S., or longer sides, bear a very little S. of E., and dip at an angle of about 45° to the S. Hence, while the south edge of the islet has a smooth slope, being formed of the uppermost layer produced by these planes, the northern side, on the contrary, is steep and rough, presenting a series of broken ledges rising over each other and dipping inwards. The surface of the rock is indistinctly marked by lines at right angles to the principal ones. At the western end, where the remnants of some of the layers stretch into the sea, and are broken up by the waves, they are divided by these cross planes into irregular fragments. Other lines are occasionally distinguishable, running N.E. by N. The rock is very like those at the adjoining point, but has a greater tendency to a compact hornblendic character. The point is succeeded by a considerable tract of mangrove.

The next point is the steep narrow end of a spur covered with jungle, save at the summit, from which rises an enormous rock partially visible through the foliage from the water. With some difficulty I walked and clomb round it through the jungle, and a minute examination on all sides proved that its general external configuration was the result of its internal structure. The northern face, or that which overlooks the channel, is very lofty and picturesque. Its lower portion is of great length, stretching quite across the hill, and rises to a considerable height perpendicularly, or rather with a slight inclination inwards. Above this wall the rock, as it rises, retires and narrows by successive irregular steps, so as to present a ruined castellated appearance. The nearly perpendicular wall is the face of the outermost of the layers of which the whole mass is composed. Its direction, agreeing with that of the internal planes of weaker cohesion, is E.S.E. nearly; but it is slightly curved. The face is marked by two systems of imperfect grooves crossing each other. One set approaches to vertical, but dips some degrees to the W. The other approxi-

mates to horizontal, but has a dip of a few degrees to the E. Similar markings are found on the southern face of the mass, and they show the directions of two systems of divisional planes. The eastern side of the rock dips inward concavely, and probably exposes the true form of one set of the divisional planes. On one side the continuity of its surface is interrupted, and the layers assume a tendency to enwrap nuclei. The west face of the rock dips outwards, descending by irregular steps. These are formed by two of the systems of divisional planes. They are much broken, and in some places traversed by channels of some regularity, which are evidently formed in planes of division. All the planes seem to be in some degree curved.

The internal structure of the rock not only determines its general external figure, but even the vegetation which it supports. Thus the S. and N. sides, being nearly perpendicular, do not retain moisture, or afford beds for the larger rock plants. They have a partial covering of lichens. The E. face is bare. The west face, on the contrary, from its slope, roughness, and numerous hollows, retains moisture, and is clothed with a thick mass of dark green ferns, mosses and other plants. The rock is a variable mixture of felspar and hornblende confusedly aggregated, and, from the preponderance of the latter, decomposes into a deep red soil.

A very extensive tract of mangrove succeeds, occupying the wedge-shaped space between the two hill systems of the island, or rather, as seems probable, between the two islands. At a point near the eastern end of the island a rock is exposed, which is splitting into small cuboidal fragments. It possesses a twofold mineralogical character, being either a remarkably large grained and beautiful compound of opaque white felspar tinged green, and blackish green hornblende, or a very fine grained black greenstone approaching to basalt, in which the felspar is thickly dispersed in minute granules in a granular base of hornblende. It is occasionally traversed by minute veins of felspar. The more felspathic rock is in like manner traversed by hornblende veins. The junction of the two characters in a specimen is sudden, but from the hornblende nests in the larger rock frequently resembling the fine grained rock, and the felspar near the plane of junction assuming a greener tinge, the transition does not appear abrupt.

The western point of Pulo Ubin is eminently beautiful. A group of large blackish wave-worn rocks advance in front into the sea; and, from the acuteness of the point (hence by the Malays called Tanjong Tajam), stand out from the land in full relief, as if they had been planted there to stem the force of the western currents, and defend the island from their assaults. Behind these rise great masses, with their perpendicular faces sinking into the

water, and their serrated summits overshadowed by the branches of lofty trees. The peaks of other and probably still larger rocks are partially seen through the branches, and in the forest twilight behind. Rounding the projecting group of blocks the coast presents a succession of noble and varied rocks, here advancing into the sea, there abiding by the land, and sometimes stretching along it continuously like a grey rampart; while, over all, a glorious profusion of many formed, many coloured, foliage is spread out, in which gay flowers are not wanting; and the massy forest ascends high and dark behind, or where the rocky wall is broken and irregular, advances some of its mighty children into the breaches. The trees here, as indeed almost everywhere around the shores of Pulo Ubin, are strikingly varied, beautiful and imposing.

I have only partially examined the northern coast near the eastern and western points. Not far from the latter there is a very large grooved rock half concealed by mangroves. The grooves are curved in their descent, and those at one place in an opposite direction to the others. The grooves face N. by N.W. After passing a mangrove tract to the eastward the spur of a hill projects and exposes a broad rocky face. From this, plates from three to four inches thick are falling off. These are composed of laminæ from one-fourth to one-fifth of an inch in thickness. The direction of the laminar planes is S. by S.E., and they slightly dip to W. by S.W. Parallel divisional planes intersect the face of the rock at irregular distances of one, two, or more feet, dipping southerly about 45°. The rock is a syenitic greenstone, consisting chiefly of crystallized felspar, in which dark green hornblende is disseminated, frequently in aggregations mixed with granules of felspar, sometimes the one and sometimes the other predominating. It also occurs in small cloudy spots and fibres of extreme tenuity in the felspathic base, so as to give it a faint varying greenish hue. At the base of the rock are large angular fragments of a dark blackish greenstone similar to that of Pulo Sejahat.

To the east of Tanjong Tajam, along the southern shore, rocks are abundant. I landed at an open sandy place where there were marks of footsteps, and ascended through the jungle by a crooked path, half concealed beneath brushwood, to the brow of the hill. Here an acre or two has been recently cleared by Malays, who occupy two little huts or rather pondos. Close below on the E. is the bottom of a valley separating this from the adjacent hill, and running N.N.E. and S.S.W. The soil is sandy clay, and seems to be decomposed granite of a light reddish colour. Granite, very hard and with quartz apparently predominating, protrudes at some places. It is covered by small parallel veins or fissures, running E. and W., and S.E. and N.W. The faces of two of the blocks are very slightly grooved. In the soil are some pieces of

altered rock, like those which abound on many hills in Singapore, and which I had considered altered granite. One piece which I picked up is quite calcined to appearance, like the ordinary scoriæ of Singapore.

On, or rather in front of, the beach, and within the influence of the tide, there are large blocks of various sizes, and from twenty to three or four feet in height. On the beach behind them are smaller rocks, and further in large blocks again, projecting from the soil of the hill-side. The E. side of one of the latter has a singular aspect, appearing as if, to the depth of three or four inches, it had been torrified. The surface is rough, semi-vesicular and blackened, the sides of veins or fissures reddish black. The interior is like the half-decomposed granite found in fragments on Kaynan's hill in Singapore. The S.W. face of one of the large blocks on the beach slopes seaward and is furrowed, but the furrows are not very regular or well marked. This rock is a syenite. It nearly resembles that of Mr. Dyce's hill in Singapore, but the hornblende is of a lighter green. On the S.S.W. side of the next large block to the west, the grooves face the S.S.W. On the sea face there is a deep split or crevice half-way through the rock, and varying from two to three feet in breadth. Its direction is about N.E. by E. The N.N.W. side of the rock has large grooves which face the S.W. nearly. On the W. side there is one groove and on the N.W. none.

Beyond this (to the W.) a large flattish slightly convex rock occurs, somewhat in external aspect like that of P. Sejahat.

Further W. there is another extended convex ledge. The surface at some places appears as if it had been much acted on by fire, so as to be covered with a rough partially vesicular coating of altered granite. Where most altered, and also partially in the veins or fissures, it in some degree resembles the ferruginous scoriaceous parts of the torrified sandstones to the S. of Singapore Town. Where least altered, the granite resembles the ferruginous fragments of Kaynan's hill. This rock is traversed by two rough horizontal grooves and numerous veins or slight fissures, running in the direction of its length, or N.W. by W. and S.E. by E. nearly, a line which cuts the hill of Tanjong Pamoodang on the main. In the lower of the two grooves or channels there is a cup, the surface of which is rusty coloured. Two sharp pieces of rock project from it. One of them is of a very dark green, owing to the hornblende greatly predominating. In the cup I also found a globular volcanic stone, semi-vesicular on one side. It is very heavy, consists of a rusty substance, and exhales a strong chalybeate smell; at right angles to the above there are other splits. At one place, where the beach is formed of decomposing rock, a ledge about six inches high and two feet broad, runs out and dips below the water; originally it was probably harder than

the rest, but is now soft. It has a whitish and yellowish red colour. Felspar predominates in this neighbourhood. On the beach altered fragments are strewn. Some are large rounded blocks, which, internally, are of a deep brick-red colour. The shore of the next point is strewed with blocks of various sizes. Further in there are large masses, of which some are broken. The Point is the rounded extremity of a low hill (or one of the flanks of the range of the island) which rises from the beach. Piles of rock are partially seen through the jungle on the hill-side. From the west angle I ascended the slope. A few yards up there is a remarkable mass of rock, partially split. The S.W. portion is, in its general outline, as viewed from the S.E., a pyramidal block, separated on the N.E. from the rest of the mass by an irregular chasm, and, where its base rests on the mass below, also fissured. Its face is grey with lichens and mosses, and so rough with channels as to appear wholly wrinkled. The channels face the S.E. and are mostly inclined to the N.E., but they are frequently irregular, curvilinear, or slightly sinuous. The rock is a syenite, consisting of felspar, dark green hornblende and quartz, the first greatly in excess.

At the bottom the syenite changes abruptly into a greenish black hornblendic semi-flinty substance, similar to that of P. Sejahat. At some places it is about two feet thick. This was probably the thickness all along the base originally. The fissure between this block and the mass on which it rests runs through this substance, as the upper surface has in some places a thin coating of it. It is broken with great difficulty. I hammered at the edges for some time with no other effect than to knock off the thin coating of decomposed rock, and had to be satisfied with fragments of some small rhomboidal masses, which I found loose in the fissure of junction. The rock decomposes at the surface into a soft yet tough greyish powdery substance. The line of junction between the hornblende and syenite could not be minutely examined on account of the weathered state of the surface. I succeeded in knocking off one small specimen at the junction. In this the black flinty rock first passes into a greenstone, then the grey felspar increases till the hornblende appears in cloudy spots, streaks and grains, dispersed in a base of felspar. Then, in this compound base, crystals of felspar appear. The number of crystals increases till the base entirely disappears. The parent mass is of great size, stretching from the fissure which divides it from the block described above to the S.E. Beyond this it turns to the N.E., and exposes a high perpendicular face, of which the upper half is deeply channelled, and the summit broken into irregular sharp pinnacles—the terminations of the ridges that separate the channels. One of the channels, the second from the S.W. angle, reaches a little lower

than the others, gradually shallowing like them as it descends; the stem of a tree rooted at the base ascends the face of the rock and enters the bottom of the groove, following it till, as the depth increases, it is lost to sight; at the summit it re-appears and spreads its branches above the rock. At the N.E. extremity of this portion of the face, the rock retires a few feet, and then stretches again to the N.E., showing a high quadrangular face with only a few channels.

Facing this side, and at a distance of fifteen to twenty yards, a much larger and more regular mass rises in the jungle. The face opposite (and I am particular in noting the directions of the faces, because they appear always to coincide with structural planes of division or imperfect cohesion) is about N.E. by N., that is, nearly the same as that of the rock opposite. This face is nearly quadrangular, and, judging by the eye, somewhat above thirty feet in height. The upper portion exhibits a few furrows, some of considerable depth, but, as the face slightly inclines inwards, these terminate near the top. The N.W. and S.E. face (*i.e.*, that facing the strait or S.W.) is more imposing still. It is 110 feet in length and about forty in height. It is slightly inclined inwards, and is exfoliating. The upper part alone shows two or three furrows, a few feet in length. It is surmounted by a thicket of shrubs. The rock is a syenite, white felspar in general constituting the great bulk. In some places portions of it have a light greenish hue. The hornblende is irregularly dispersed, generally in a state of confused aggregation, and sometimes mixed with felspathic grains, but frequently also in long-drawn streaks and seams. At one place it was so much in excess as to give the fractured surface of the rock a very peculiar variegated appearance, blackish-green, light green, and a light iron hue, being variously intermixed with a lesser proportion of white and greyish. On the S.E. side the rock slopes to the ground so that I was enabled to climb to the summit and examine it. It is throughout more or less furrowed, but the furrows are irregular in their size, positions, and directions, and do not approach to the symmetrical or artificial appearance of those on the sides of some of the rocks. About the middle of the rock, from the bottom of the slope on the S.E. to the edge of the opposite or N.W. side, there are some well-marked divisional lines running N.W. by N. nearly, but there are others less marked at various angles with these. The rough holes and gutters on this part generally follow the same direction, which is also that of the general slope. Toward the N.E. face the summit slopes in that direction, and the hollows take the same course. Some of these are prolonged in channels which descend the vertical N.E. face, which is of considerably less height than the S.W. The examination of this rock satisfied me that the slope of the rock, and the direction of the structural

planes of imperfect cohesion, determine the direction of the channels, and, this being the case, the conclusion seems inevitable, that rain has been the great agent of erosion. On the S.E. face, where there is a gradual slope to the ground, the hollows cover the whole surface, but are irregular, because there the rain torrents descended with less impetus, and their action was not greatly aided by the gravity of the masses on which he acted. At some places it has worn depressions of considerable depth and breadth along a line of division, but, owing probably to the occurrence of portions of rock of a different and less decomposable arrangement or apportionment of ingredients, these are separated by solid walls or small fissures. Occasionally a small channel has been worn through the bottom of these dividing walls.

On the S.W., where the structural planes are inclined inwards, and the sheets of rock between them are falling off, there are only a few well-marked grooves at the upper edge. At one place where the rock has less deeply exfoliated on one side of a cross divisional plane (*i.e.*, one perpendicular to the face) than on the other so as to present a side of a few feet broad at right angles to the face, a channel, about three feet deep and one foot broad, opening on this side and parallel to the face of the rock, shows clearly that here a portion of the sheets has been loosened, split, and then fallen out. The bottom has afterwards been worn concave from its serving as a rain channel.

The N.W. face, so far as the rock continues nearly perpendicular, presents deep furrows, and, when it inclines inwards, these disappear.

The N.E. face, being perpendicular or slightly inclined outwards, presents channels from the summit to the base.

The N.W. and S.W. faces may have originally been grooved to the bottom, as the channels are (on the latter very obviously) decreasing in length by the gradual exfoliation of the rock in planes which intersect them. The lower surface is fresh. Where the channels exist the rock has a black, grey, or hoar, antique look. If the channels are altogether owing to an operation which is still in progress, the period required to produce them must have been very long, as the weathering now going on must be extremely slow. The surface is covered with such a close vegetable covering, that it must, in great measure, protect it from the mechanical action of the rain. Descending a little to the east of the spot where I had entered the jungle, I examined some large syenitic masses which rose from the beach. One of these was divided by a chasm, and on one side, to the breadth of a foot or more, and on the other, to the breadth of three or four feet, the rock was a black hornblendic basalt inclining to flinty, similar to that before mentioned. This must originally have been a con-

nected zone or dyke, about eight feet broad. The basalt has been freshly quarried, and this, at one limited place, exposed the line of junction of the two rocks. It is sharp and well defined, and on each side the rocks possess precisely the same character which they have at a distance from it. Some of the fragments lying around, however, exhibited the two rocks blending at the line of junction somewhat in the manner of the specimen mentioned above, but frequently thin laminæ of the basalt penetrate the crystallized portion of the rock. From the very variable nature of the syenites and volcanic rocks of this island, and the abruptness with which the proportions of the constituents of the same mass often change so as entirely to alter its aspect, I had been previously led to suppose that the whole belonged to one and the same formation. The appearance of this zone at once pointed to the contemporaneity of its origin, and I have no doubt that it was formed in the mode suggested by Mr. Darwin*—viz., by the opening of a fissure in the syenitic mass, while yet viscid, into which the most fluid ingredient, hornblende, drained from the sides or rose from below. The basaltic rock is intersected by three systems of parallel planes of imperfect cohesion, which divide it into rhomboidal pieces, the sides of which are white, owing to a slight superficial decomposition. Of these systems of planes one has a strike N.W. by W. nearly, and is almost vertical, but with a slight dip easterly. Another runs N.E. by E. nearly, and deviates more from vertical to the S.E. by S. than the other.

Proceeding along the beach to the eastward I found a large mass, on the S.E. side of which was the remnant of a basaltic dyke, which was marked by a few horizontal grooves. The face of the remnant is cavernous, and looks as if it had been torrified. Further on I noticed a small portion of basalt adhering to a large syenitic block. The next noticeable rocks were some masses of soft semi-decomposed syenite with the surface to some depth vesicular. This is possibly due to the continued action of the waves and the atmosphere.

To the E. of this I found on the beach a small globular rock, three to four inches in diameter, of a volcanic appearance. Externally it had a smooth enamel of a reddish and blackish brown colour. This is succeeded by a red and reddish yellow band from one quarter to half an inch thick. Internally it is a uniform finely vesicular mass of a dull brown hue and with a portion drusy. Near this the beach was plentifully strewed with small stones, many resembling those found on some of the Singapore hills, and amongst which ferruginous fragments of semi-decomposed rocks, granite, syenite, greenstone, &c., can be recognized.

The hilly point was succeeded by a mangrove flat, which con-

* "Darwin on Volcanic Islands," p. 124.

tinued till we reached the point opposite the western end of Pulo Tam. The mangroves fringe the point, which is the extremity of a hill of a brownish red soil without any rocks exposed. The soil appears to be deep and tolerably friable. The forest trees are tall and luxuriant, but many of the finest have been felled by Chinese woodcutters, by whose tracks I was enabled easily to ascend the hill.

Beyond this point, and along the greater portion of the strait of Pulo Tam, the coast is a mangrove jungle. There is a small creek at one place, and so far as I could judge from the appearance of the hills on either side it seemed probable that the mangroves here extend quite across the island, and that it formerly consisted of two separate islands. The northern coast on the opposite side of the island is also the margin of a broad mangrove swamp which I observed to be likewise penetrated by a creek. If there is one continuous creek across there must still be in fact two islands. Towards the E. end of P. Tam, where we again come in sight of the Singapore coast, two lines of high jungle rising over the mangroves mark the direction of the next hill flanks. The base of the first is wholly enveloped by mangroves. The next advances to the beach at one spot where a reddish rock rises immediately from the water to the height of about twenty feet. The front alone is exposed. The sides are shaded by the jungle, and over the summit is a luxuriant canopy of shrubs and small trees which fairly entitle it to be called the fertile rock. One of the trees is exceedingly beautiful, being covered with a dense mass of dark green glossy foliage, which it seems to spread triumphantly towards the loftier trees growing around it and rooted in the soil but less adorned than their sister of the rock. The face of the rock is scaling off. It decomposes into a deep red earth, and the prevalence of iron which colours the soil probably also gives the dark green to the vegetation which it supports. The whole rock is one rudely rounded mass and apparently composed of concentric layers. Towards one side a wide chasm penetrates it, leaving at the eastern angle a columnar portion divided by a horizontal fissure into two rounded blocks, of which the upper is still at the top connected with the mass. The neck of junction consists of the remnants of numerous layers wedged in as it were, one-half with their convex sides to the spectator or embracing the rock above, and the other half with their concave sides towards the spectator or capping the block beneath, thus presenting the appearance which a number of somewhat stiff sheets of paper, or other flexible substance, do if they are compressed tightly in the middle and their ends made to diverge on both sides.

Beyond Pulo Tam a point occurs from which a large furrowed rock advances into the sea. This I inspected with some minuteness. The channels, even on the same face, run in different directions

so that they sometimes cross; but, more frequently, after meeting, one only is continued. In all cases they evidently occupy the lines of division or imperfect cohesion. On the side facing the N.W. the direction of the larger ones is nearly N.E. and N.W. On the S. side they are deep and face the S. These latter, it appeared to me, had been gradually excavated by the alternating action of the sea and the atmosphere. A little further to the E. the gutters of the rocks faced N.E. by N. nearly; at one place the rock is nearly worn through, and the breach is half filled with large angular fragments, the remnants of the layer or ledge which had originally occupied the cavity. Its sides are parallel and mark two planes of division. The furrows beyond this were generally in one or other of two directions according to the slope—that is, either facing the N.E. by N. or W.N.W. nearly. The general surface at some places is uneven, which occasions varying slopes, and it appeared clear that the directions of the furrows at these places were fully explained by the directions in which the slopes would cause the rain currents to run down them. In many cases, the latter did not exactly coincide with the former, because no fissures or lines of division did. But of the two systems of parallel divisional lines by which the surface was intersected, that which most nearly agreed with the slope had given their directions to the gutters. Where the face of the rock was slightly hollowed the gutters converged. The ridges between the divisional lines are sometimes crossed by gutters, but only where this would be rendered necessary for the descent of the water.

It was not until I had examined both the eastern and western portions of the island that I was able to revisit the point where my acquaintance with it had commenced. It proved that I had seen only one small section on the S. side, and that the S.E. and E. faces possessed the principal rocks. These stand in great profusion along the beach or rise from the water in front, while the hill behind appears like some ancient "castled steep," with remnants of flanking walls midway up, and broken battlements frowning from the summit. Many of the piles are on a grander scale than any that are found elsewhere; they have a greater air of antiquity; and rising as they do in diversified forms—here in solid cubical masses, there traversed by deep chasms and bristling with sharp pinnacles, at one place standing out in full relief in their grey mossy coating, and at another covered with a trellis-work of roots, trees ascending from their summits into mid-air, and the entire rock buried under a load of varied vegetation—the effect of the whole is at once picturesque and imposing in an extraordinary degree. I can only afford to notice a few of the most remarkable rocks, although a faithful description of the whole is desirable, since the Chinese quarrymen are proceeding so rapidly in their work of destruction that it is to be feared these grand

and singular natural phenomena will, in a few years, have been entirely obliterated.

One of the most striking of the rocks is a connected pile of great bulk and extent which stretches from the base of the hill across the beach into the sea. It is cleft in a few places by narrow dark chasms, three of which, in particular, divide it into four principal portions. The inner is a great cuboidal mass based in the land, and its sides, being very slightly furrowed, rise perpendicularly like solid walls. At the N.W. angle rises what may be called a great columnar turret, partially severed from the mass by a deep narrow chasm, and traversed from top to bottom by deep channels divided by narrow ridges, and with its summit ascending some yards above the level of the pile. A tree rises from the pinnacled summit, and the whole of the western side of the columnar mass is reticulated by its roots. The principal of these run down the channels to the ground, and, as they descend, give out numerous lateral branches which closely embrace the rock, following its sinuosities and entering the cleft between it and the main mass. The roots are so numerous and so interlaced that they conceal the greater part of the rock; and, towards the summit, where they converge beneath the trunk, only some narrow portions of the ridges are visible. These differ so little in shape and colour from the roots, and are so closely united with them, that, from some points of view, the whole appears as the solid stole of the tree. From other points of view some of the acicular summits of the turret are free from the network of roots, and others pierce through it. One of the long nearly horizontal branches of the tree which stretches seaward above the pile is literally covered with air plants save at its extremity. The second mass of the pile is also cubical, but distinguished by a bulky awkward-looking protuberance, which rises above it towards its edge and leans to one side, but for which it is impossible to find any architectural prototype. Its rounded shapeless edges and partially depressed sides give it a form more resembling a bit of ginger root than anything ever shaped by art. The W. side of the mass above which it rises is traversed by a few furrows nearly vertical, but dipping a little from N. to S. The upper portion, or about two-thirds, of the east side is rather more furrowed. The lower portion bulges out and is smooth. The furrows incline to the southward, bending more decidedly in that direction as they reach the bulging portion of the rock, on the upper surface of which they terminate. The third portion of the mass is smaller than the preceding, and its upper surface slopes seaward. Its sides are much channelled. The upper portion of the southern face of the fourth or external mass slopes curvately from the cleft that separates it from the preceding mass till its lower portion approximates to vertical and dips beneath the sea. Its surface is on all the three exposed sides an uninterrupted series

of sharp ridges, and included furrows which vary in depth and breadth. The depth is from two to five feet. Some are broad and deep semi-cylindrical concavities, the surfaces of which are grooved or fluted all round. The grooves are continued without interruption, and with all their regularity of form, beneath the level of the sea, where they are quite covered by shell-fish. The axis of the grooves on the front runs N.W. by W. and S.E. by E. nearly.

At the S.W. side there is a curious ladle-shaped cavity of which the bottom is flat and about a foot in depth. A channel leads into it from the upper edge of the rock and another, very shallow, descends from it. On one side is a small heart-shaped hollow. A band of black hornblendic rock traverses the upper part of the cup and includes the hollow.

The appearance of the whole mass from the sea is very remarkable. The summit seems to consist of numerous peaks, the lower being the projecting extremities of the ridge, and the higher rising well above the mass-like turrets, while the tree spreads its arms protectingly over the whole.

On the vertical surface of an adjacent rock there is a deep cup-like depression. The Chinese have partially broken the rock at this place, and below the surface of the cup it is seen to be arranged in concentric foliæ corresponding with the cup.

A little to the E. of the pile above described, a large wedge-shaped rock rises out of the sea. It is furrowed on all sides.

Half-way up the hill behind, there is another very remarkable mass, the face of which stretches along the hill in a horizontal direction for apparently 150 to 200 feet, and with a height in some places of 40 to 50 feet. A peculiar feature of this rock is, that, while the western portion is grooved vertically, the eastern is traversed by a series of parallel clefts or furrows dipping from E. to W. at an angle of apparently about 45°. The belts of rock between them are broken through in many places by irregular channels often approximating to vertical. The surface of this side is further back than that of the rest, and as a small projecting portion of its upper edge, which is continued in the same plane with the latter, presents vertical channels of similar dimensions and aspect to those which mark it, I conclude that after the whole face of the rock had been channelled out, a tabular mass here fell off, leaving only a portion where the cohesion was firmer, and that the next layer or laminæ, possessing a different structural cleavage, has been since furrowed in the direction of its principal divisional lines. This conclusion is strengthened by the circumstance that this portion of the face has an angular broken appearance, and that neither its inclined nor its approximately vertical channels have the smooth regularly curved surfaces which characterize the grooves of the rest of the rock in common with

the other masses in this locality. It is to the latter, like the first rude angular outline shaped by the sculptor to his finished work. Nevertheless it also bears the impress of a high antiquity, being covered by vegetable incrustations, and embraced by the reticulations of the roots of a tree similar in species to that before noticed. Many of the principal roots run along the bands or ridges between the grooves. Some prefer the latter, and some pass from one groove to another by the gutters which intersect the dividing ridge. The summit of the rock presents a dense mass of vegetation.

On the top of the hill, which is here very steep, there are several piles of rocks whose perpendicular sides project from the declivity, while their summits are nearly on a level with that of the hill. One of these is divided into distinct entire masses by wide vertical chasms. The perpendicular faces are grooved. Another adjoining pile, on the other hand, has been broken up into a number of cuboidal blocks, and long tabular masses resting on these. The passages between the former are in many places broad and deep, and, where they are covered by the superincumbent rocks, form dusky cavernous hollows, which are tenanted by bats. Some of the external passages are like doorways, being about seven feet in height and six across. At the side of one of these entrances half of the horizontal surface of one of the supporting rocks is exposed. It is hollowed out into a shallow basin, about six feet in diameter and six inches deep, which is filled with vegetable débris and water. One of the horizontal tabular masses is about thirty feet long. On its *under* surface, which is smooth, are two semi-globular hollows. An adjacent mass is about forty feet in length, and eight in breadth. On its *under* surface also I observed a cup about three feet in diameter and one in depth at the centre. The hill is here very narrow and slopes steeply on the inner side to a mangrove flat. On this side there are also several rocks. One of considerable size had a smooth rounded surface unmarked by any furrows.

The rocks along the beach, although with a few exceptions not remarkable for their size and architectural features, are geologically interesting. At the farthest Chinese hut to the eastward are broad flat masses stretching across the beach, and only a few feet in height. Their surfaces are traversed by parallel rectilinear fissures and slight grooves, marking divisional planes, and the direction of these, and also of the longest edges of the rocks, is almost due N.E. and S.W. Proceeding along the beach to the westward, a fine example of concentric or parallel curved exfoliation occurs. Of what has originally been an extensive mass of rock there only remain a few solid blocks, of cuboidal and rudely spherical forms, which rise from the decomposed and semi-decomposed bed worn down nearly to the level of the beach. Embracing the rounded bases of these nuclei, and forming the bed, are the upper edges

of parallel curved laminæ, which continue till those spreading out from an adjacent nucleus meet them. Sometimes the same laminæ are seen, after embracing the end of one block, to bend reversely, and embrace another nucleus, so that the surface or horizontal section exhibits a series of narrow parallel S.-shaped bands. The variation in the curves, according to the form of the sides of the nuclei, is very great and striking. The lower corner of one of the blocks is conical, and the concentric sheaths or caps have the same shape. In the triangular spaces left where three systems of laminæ meet are prismatic masses, solid, but of a crumbling structure, and in composition similar to the laminæ.

Near one of the Chinese houses I observed that the face of a rock, freshly split by the Chinese, was a regular curve, and on the hill the side of a large rock had a similar curve. I partially re-examined the rock mentioned (*ante*, p. 27). The W. side is marked by deep grooves, of which the axes are N.E. by E. nearly. The planes in which these are formed also determine the direction of the face of the rock overlooking the channel. Many of the grooves on the west side are a succession of deep pear-shaped cavities. I think there can be no doubt that these are owing to sheathed nuclei having been gradually excavated. That such nuclei are very abundantly dispersed amongst the rocks is evident.

A little to the W. of this rock and towards the beach there is a large flattish rock. One side is a curve in which parallel laminæ, after retaining their continuity for some thickness, part in the middle and give off two systems perpendicular to the first. If this rock, which is nearly buried in the soil, were exposed to meteoric action, a deep groove would soon be formed in the line where the laminæ part and bend inwards.

The metallic vein formerly noticed runs N.E. by E. The whole rock is traversed by other planes in the same direction, as appears from slight scorings on the surface. Another principal divisional plane is S.E. by S., as is well seen by the direction of the edges of some large rocks adjoining.

To the S.W. of the grooved rock first described, the rocks on the beach are either extended and flat, and a few feet above the level of the beach, or, were worn down nearly to the level of the beach, they are broken into small cuboidal and spherical fragments, disposed, where this has been recently done, in regular lines. It is obvious how readily rocks with such a structure may be worn into cavities and channels.

Having now sufficiently gone into details for the scope of this paper, it remains to explain the conclusions to which I have been led by my observations. In truth, however, I have not much to say on this subject (save what is of a general speculative nature) that has not been anticipated in the second portion of the preceding remarks. The first circumstance worthy of note is, that the

observer, after he has partially explored the island, is wholly unable to conjecture, at many of the points, whether the next few paces along the shore will bring him to a granitic, a syenitic, a dioritic, or a basaltic rock, or even whether the mass before him, although at the place where he has broken off a fragment decidedly a granite, may not in other places be found to consist of any or all of these other minerals. The island, in its general mineralogy, seems to break through all arbitrary distinctions of plutonic and volcanic, and to confirm, in a very striking manner, the conclusion to which most geologists have arrived—that these great classes of rocks are essentially similar in origin. The difference in structure, as between a compact basalt and a crystalline granite, is referred to the difference in pressure to which the basalt, cooling near the surface, and the granite, cooling at great depths, were subject at the time of their solidification. That this may, or rather must, have a great influence is certain; but the occurrence of such rocks as these of Pulo Ubin cannot be explained by difference of pressure, and, indeed, proves that there are in Nature causes independent of variations in pressure, adequate to the contemporaneous production of rocks belonging both to the volcanic and the plutonic series.* Under whatever circumstances the granite of the island was produced, under the same circumstances were the syenites and greenstones also produced; and some other cause than great difference of depth and consequent pressure must have determined the mutation in the mineral character of the mass. But if it be certain that such cause existed, would not that cause of itself be adequate as a general origin of the difference in igneous rocks attributed to inequalities of pressure? Mr. Lyell (perhaps the most distinguished of our English writers on geology, whether we consider the originality of his views, the philosophical spirit in which they are generally conceived, or the graceful simplicity of the language in which they are expressed), in the chapter of his "Elements" in which he treats of the plutonic rocks, and in which he refers them to a deep subterranean source, quotes the following passages from Dr. MacCullogh's "System of Geology":—

"The ordinary granite of Aberdeenshire is the usual ternary compound of quartz, felspar and mica; but sometimes hornblende is substituted for the mica. But in many places a variety occurs, which is composed simply of felspar and hornblende; and in examining more minutely this duplicate compound, it is observed in some places to assume a fine grain, and at length to become undistinguishable from the greenstones of the trap family. It also passes in the same uninterrupted manner into a basalt, and at length into a soft claystone, with a schistose tendency on exposure,

* Mr. Lyell confines the term *plutonic* to *granites* ("Elements," vol. i. p. 1 and vol. ii. chap. 32), and I here use it in the same sense. Other writers, an perhaps Mr. Lyell himself, occasionally give it a wider meaning.

in no respect differing from those of the trap islands of the western coast." The same author mentions, "that in Shetland, a granite composed of hornblende, mica, felspar, and quartz, graduates in an equally perfect manner into basalt." Mr. Lyall continues: "In Hungary there are varieties of trachyte, which, geologically speaking, are of modern origin, in which crystals not only of mica but of quartz are common, together with felspar and hornblende. It is easy to conceive how such volcanic masses may, at a certain depth from the surface, pass downwards into granite."*

This is very true, but although the facts previously cited from Dr. MacCulloch prove the easy gradation between basaltic and granitic rocks, they seem as little reconcileable as the rocks of Pulo Ubin are with the theory of a necessarily deep tartarean origin of the latter, and less subterranean origin of the former. In Singapore there are blocks of greenstone as highly crystallized as any granite, but in which large isolated portions become compact and approach to basalt. In these cases it is impossible to refer the change from a compact to a crystalline structure merely to the mechanical pressure of the superincumbent crust, for such a force must have acted uniformily throughout the whole mass before solidification. The cause of the variations in the igneous rocks (excluding those which cool in or near the atmosphere), must be chemical or electrical more than mechanical. It is probable that Mr. Darwin, in drawing attention to the established influence of disturbance in causing certain of the ingredients of a molten mass of different elements to crystallize and separate from the mass, and thereby attain the power of ascending or descending through it to a different level according to the specific gravity of the crystals, has discovered a very potent mechanical agent which is subservient to the chemical causes of the gradations in the plutonic and volcanic rocks. While believing, however, that the influence of continued uniform pressure (and this implies the absence of disturbance) will be chiefly exhibited in communicating a homogeneous character to the fluid rock solidified under it, I would not be understood to limit the effect of disturbance to the mere separation of ingredients by their different relative gravities. It rather appears to me that a very important operation of mechanical agitation has been overlooked by Mr. Darwin.

This leads me to notice the next remarkable feature of the Pulo Ubin rocks, their cuboidal, globular, laminar and zoned structure, which I conceive to be intimately connected with their varying mineralogical character; and, in fact, to be an effect of the same cause. As the varying crystallization of the rocks seemed to reject the distinction of plutonic and volcanic, so their structure not only approximates to that of both those divisions, but even

* Lyell's "Elements of Geology" (2nd. ed.), vol. ii. p. 334.

partakes often in a striking manner of that which characterizes some of the principal members of what Mr. Lyell terms the metamorphic series. The alternation of beds or zones of different composition, and the approach where mica abounds, to the structure of gneiss, frequently assimilate them to rocks of that series; while the predominance of granitic types, and the general character of the whole rocks, demonstrate their direct origin from igneous fusion. The close approximation of this development of igneous rocks at some of its points to certain points in gneissose developments will be more particularly considered in the sequel.*

Some geologists appear still to doubt whether granite ever had an original concretionary structure. Thus, Sir H. de la Beche, in his valuable report on the "Geology of Cornwall, Devon, and West Somerset" (p. 450), in reference to the detached blocks, protruding rocks, and hollows called rock basins, which abound in the granitic tracts of that district, says that, after having given much attention to the subject, he is far from perceiving good evidence in favour of the opinion that the globular blocks are owing to an original concretionary arrangement of the granite. He adds, that after much careful observation, he is inclined to refer the rounded character of a large proportion of the blocks, either scattered over the surface or still existing in the tors of the granitic districts, more to the decomposition of surfaces produced by divisional planes than to any other cause. Many of the exposed granite blocks on the Pinang mountains are rounded at the edges, and this is undoubtedly there the result of mere weathering. That an originally angular block must disintegrate more rapidly on the edges than elsewhere is evident, for there two faces, both subjected to meteoric action, approximate and meet, so that the edge decomposes quite through, and being in every fall of rain converted into the summit of a petty waterfall, the same mechanical process, which, on a grand scale, is wasting the cliffs of Niagara, wears down the decomposing edge. But such an operation would not explain the occurrence of really globular blocks, and as these are seen on Pulo Ubin in the very act of separating from the original compact masses in which they had been formed, and exposing the concentric coats of which they consist, the fact of granite assuming this structure under certain conditions is matter of ocular demonstration. The fact, however, is not new, for, although it is not noticed by Lyell, Phillips, or any other of our recent English writers on the plutonic rocks with whose works I am acquainted, and Sir H. de la Beche is evidently not aware that a concentric laminar structure had ever been actually observed in granite, it is distinctly mentioned by one of Werner's pupils, the most able and learned of our few mineralogists, Professor Jameson, of Edinburgh, in his article on mineralogy and geology in the "Edinburgh Encyclopædia,"

* See further on, p. 50.

and it seems to be also well known to many continental geologists. Professor Jameson says: "Some granites are disposed in rounded balls or concretions, which are from a foot to several fathoms in diameter. These balls are sometimes composed of curved lamellar concretions, which always include a harder central mass or nucleus. The spaces between the concretions are filled with granite of a softer nature, which decays readily, and thus leaves the harder central masses heaped on each other or strewed about. Such heaps or tumuli have been erroneously described as rolled masses brought from a distance to their present situation by the agency of currents that formerly swept the surface of the earth. Examples of this kind of structure occur in the island of Arran, Bohemia, the Hartz, the Fitchtelgebirge, and in other countries."*

In the Pulo Ubin rocks the laminar structure is seen well defined and unequivocal. In the globular form it is as regular as that of trappean rocks; and Mr. Scrope's description of some remarkable examples of this structure in a resinous trachyte, or pitchstone porphyry, in one of the Ponza Islands might be applied verbatim to some of the Pulo Ubin rocks. It is not confined to spherical concretions, however; for, as we have seen, it sometimes occurs in rectilinear zones,† or on the plane surfaces of cubical masses,‡ and, at other places, in irregular variously curved planes.§ In these latter cases it is not improbable that the nuclei are spherical or hemispherical towards their centres, and that the laminæ only began to depart from this form as the expanding nuclei approached each other and prevented further independent development. In such cases it is obvious that the upper portions of the laminæ have been decomposed and removed by meteoric or oceanic action, and sometimes by both combined. Whether the nucleus in most of these cases, where only the upper portion is exposed, be wholly globular or pass internally into a cylindrical form, I am not at present able to say.

In a paper of great interest upon the granitic mountain of the Brocken and its "sea of rocks," read before the Berlin Academy of Sciences, on December 13, 1842, and of which an abstract is given in the first number of the "Journal of the Geological Society of London," M. von Buch refers the external blocks with which the mountain is covered and the concentric laminar structure of granite bosses in general, to contraction of the mass on cooling. He gives this view a grand application by suggesting that the body of ellipsoidal granite mountains consists, like small bosses, of concentric layers, each repeating the form of the mountain on a diminished scale—the whole of this structure resulting from the mechanical operation of refrigeration. This structure is well marked in the granites of Devon and Cornwall, which have a

* "Edinburgh Encyclopædia," vol. xiv. p. 414.
† Ante, p. 26, &c.
‡ Ante, p. 30, &c.
§ Ante, p. 28, 40, &c.

stratified appearance, the beds conforming to the surfaces of the schistose rocks when these are superincumbent. Sir H. de la Beche considers that the laminæ or beds probably agree in form with that of the original surfaces of the granite masses after protrusion. He observed at one place alternating beds of a decomposed and hard granite, and he thinks that the difference of original structure may be due to a tendency of the whole to arrange itself in false beds coinciding with the surface of the erupted mass. At another place he observed a similar alternation of beds, which, however, in this case appeared to be at right angles to the bearing of the granitic mass in which they occurred. Schorl rock and granite were seen in another locality in alternate zones. These phenomena appear to be similar to some of those of Pulo Ubin which we are considering.

Whatever were the mechanical conditions under which the mass of Pulo Ubin solidified from a fluid state, we must admit that to no single uniform cause can we ascribe the phenomena which it presents. Assuming, as I think observation requires, that the whole is of one contemporaneous origin, we must allow that the chemical ingredients of the mass were irregularly distributed, if not originally, then at a time immediately preceding solidification. Variable mechanical disturbance may have been mainly instrumental in producing local inequalities in chemical and polar action during the transition from a fluid to a solid state, and this might have the effect of attracting certain elements to particular places, and there exciting particular mineralogical developments. A portion of the rocks beneath which the granite rose may have been melted into it, and varied the relative proportions of the old ingredients, or added new ones. It is perhaps rash to pursue this subject without an exact chemical analysis of the rocks under consideration. But so far as we can take the ascertained general composition of minerals as a guide, we may inquire whether the passage of the same connected mass from a rock in which mica is entirely absent into one in which it predominates does not support the above views? Can the frequent substitution of hornblende for mica be otherwise explained? It is true there is a great similarity in the chemical composition of the different minerals which make up the rocks of the island, but some powerful forces must have operated to cause the segregation, in limited spaces, of certain elements from the surrounding fluid mass. Mica is very inconstant in the proportion of its ingredients, and there are species which approach very closely to hornblende; but even in these the lime of the latter is represented by potash. Where we find the mica ceasing, and hornblende taking its place, we must suppose that in the original fluid or viscid mass lime had been segregated in the space now occupied by the latter.

A circumstance mentioned by Sir H. de la Beche with respect

to the granite of Devon and Cornwall bears materially on this subject. He says that towards the borders of the granitic tracts —that is, where the granite comes in contact with the circumjacent rocks—it alters its character, passing from a compound of quartz, felspar, and mica, to a schorlaceous rock. The mica first disappears, being replaced by schorl, and then commonly the felspar also disappears, and the rock is converted into a compound of quartz and schorl which are generally aggregated in nearly equal proportions. Sir H. de la Beche also mentions that near the joints by which the granite is traversed its character alters, and that it is adjoining these joints that the character of the mass at its confines becomes particularly quartzose and schorlaceous. In the lower spurs of a granite chain in Pinang I remarked that the rock was devoid of that general uniformity throughout considerable tracts which distinguished the central ridge. It was variable in its composition and texture, being frequently coarse grained. Quartz was largely developed, and in some places schorl (which I do not recollect having anywhere noticed in the ridge) appeared in large crystals and fibres. Sir H. de la Beche seems to consider that the joints, and the change in the mineralogical character of the rock at their sides must have been produced subsequent to the consolidation of the granite, since in many places the same joints traverse the schistose rocks. Would it not be a simpler explanation of these phenomena to suppose that the schistose rocks were heated, and consequently expanded, by the fluid granite; that the crystallization and solidification of the granite commenced in a band or layer next the surface where it would sooner cool, and where the contact of the solid schist, the immersion of fractured portions of it in the granitic fluid, and the greater disturbing motions* would favour crystallization; that, under such conditions, quartz and schorl are developed at the surface; that, as the heat escaped, or crystallization advanced, planes of minor tension, ultimately giving rise to the joints or planes of disconuity, were produced by contraction, variable motion, polar action, or the mutual action of regularly arranged spheroids; that they traversed the schistose mass immediately above, because, being heated by the adjacent granite, any effect produced by contraction or refrigeration, the forces of crystallization or polar action, would, to a certain extent, be common to both, and extended through the superjacent schists to some distance, because a splitting of a solid mass tends to extend itself mechanically, and the schist was probably in a state of tension from the upward pressure of the granitic bubble; that, finally, the

* It is evident that where the surface of a granitic bubble, swelling up from a vast fluid expanse, came in contact with aqueous rocks, perhaps of unequal resistance, there must have been greater and more variable mechanical disturbance than in the body of the bubble.

granite, being still in a viscid state when the joints were formed, the surfaces of the joints became quartzose and schorlaceous? Why the granite towards the joints should have an excess of quartz at some places, and of quartz and schorl at other places, is a question as difficult as it is important. It may be considered under two hypotheses: either that foreign ingredients were not introduced on the opening of the joints, or that they were. If we believe the joints to have been formed at a period in the gradual cooling of the fluid mass, some time prior to complete solidification, and while the crystals, whether incipient or ultimate, were in a viscid state and admitted of motion amongst themselves,* we shall then have a separation of the mass into geometrical cubes, prisms, &c., in each of which crystallization would proceed separately. If in these cubes we suppose the non-siliceous elements to have united first with the proportions of silex necessary for the formation of felspar, mica, &c., and the crystals thus formed to be then attracted together, leaving a base of silex for ulterior consolidation (as seems to have been the case, from the quartz in common granite filling the interstices between the other ingredients), then if there be a considerable surplusage of quartz, we should expect to find it accumulated towards the surfaces of the cubes. In those cases where schorl accompanies the quartz, some of the ingredients necessary to the schorl, such as boracic acid, may have risen in a state of gas or vapour through the joints. But without resorting to this hypothesis, let us suppose that from the first, all the ingredients existed together in the mass. The external portion of the cube, &c., differs more in mineralogical than in chemical character from the internal. The schorl of the former, compared with the felspar of the latter, has a great excess of alumina, and a great deficiency of silica. But this difference is compensated, and the balance of ingredients restored, by the quartz which accompanies the schorl. If we therefore reduce the internal and external portions to their constituents, we shall find that the essential difference is only about 10 per cent. and that it consists in the latter having about 9 per cent. of oxide of iron instead of only 2 per cent., and in having about 2 per cent. of a new ingredient—boracic acid. We can hardly err in attributing the difference mainly to the chemical action of the acid, which, whether by itself or in combination with soda, is remarkable for its fusibility, and its power of communicating this property to compounds. The tendency of certain substances in a fused mass to retire towards the surface, when other substances are there found for which they have a stronger affinity than the other constituents

* We must believe that granite existed for a considerable period in a transition state between fluidity and solidity—*i.e.*, as a viscid or pasty substance—and that the ultimate crystals which solidified were not produced during the early stages of this period.

of the mass, is well known. But there is no difficulty in conceiving that such a transfer may have been mainly mechanical. The boracic acid may have retained a portion of the matter with which it was in combination in a fluid or viscid state for some time subsequent to the crystallization and partial solidification of the felspar, &c., and the internal pressure of the semi-solidified mass alone may have forced this towards the sides, and caused it to rise to the surface. It is ascertained that both felspar and quartz remain in a viscid state at temperatures greatly inferior to that at which they are fused, and hence there must have been a degree of internal pressure subsequent to crystallization. The fugitive character of schorl is more than once pointed out by Sir H. de la Beche in his Report. Amongst other instances of alterations produced on sedimentary rocks by contact with granite he mentions some slates in which schorl has been introduced between the laminæ. A more remarkable case occurs in a granite consisting of large felspar crystals in a base of schorl and quartz. At some places the felspar crystals have been decomposed and replaced by crystals of schorl crossing each other in various directions, and the schorl in the surrounding base is evidently deficient.

The abundance of quartz at the surface may be due in some measure to the circumstance that the boracic acid, whether expelled from the interior on the crystallization of the felspar and mica, or derived from without through the joints, would, wherever its ultimate locality was, be hostile to the formation of felspar and mica there.

However we may account for it, the fact of the schorl taking the place of felspar and mica in the Devonshire and Cornwall granites, appears to be analogous to that of hornblende replacing mica in the granites and syenites of Pulo Ubin, and if we extend the preceding speculations regarding the one transition to the other, we shall find them in harmony with the views formerly expressed. We must in the first place consider the island itself as the summit of one granitic bubble, of which much of the external portions have disappeared. A portion of the bubble (its superjacent rocks, whatever they were, having been swept away), is now elevated above the sea, so as to expose a belt below high-water mark to the action of the waves which are working into the nucleus, and in their progress laying bare the structure of the external layer of the bubble. This portion we must conceive to have been nearer the pre-existing superjacent rocks than the central and higher mass (which was probably denuded to the nucleus before it was elevated to its present level), and the great variations in its structure and ingredients may have resulted from that circumstance under the influences previously adverted to.*

* If the views advanced in a subsequent part of this paper are correct, we must recognize in granitic fluid masses a period, in the gradual diminution of

The leading fact relating to the structure of the rocks, is that the principal vertical or approximately vertical planes of division have a general direction approximating to N.E.—S.W. It is also observable that the zones of softer rock and the majority of the grooves have the same directions. Pulo Ubin lies in the great plutonic band of elevation, stretching from Assam to Banca, and having, from Junkceylon southwards, a south-easterly direction. The divisional planes are therefore nearly at right angles to the axis of elevation. Is this a general geological phenomenon? It probably is, because in a locality so far removed as the south-west of England, it is repeated. Sir H. de la Beche informs us that the divisional planes of the granite and other rocks in Cornwall and Devon, are generally N.N.W.—S.S.E. The grand conclusion which he draws is, that this direction approximates to the present magnetic meridian of the district, and may, therefore, in its origin, be related to it. Pre-occupied with this view, he has overlooked the fact that this direction is at right angles to the direction of the principal granite masses of the district (E. 24° N., W. 24° S.,* which, beginning at Dartmoor, are continued to the Scilly Islands. Not merely the south-western division of England, but the general configuration of the British Islands, seems to be due to axes of elevation, having the same or an approximate range. Thus the great body of Scotland and Ireland may be considered as one connected mass upraised on such axes. Professor Phillips † mentions that the anticlinal axes of the Highlands and Lammermuirs in Scotland, prolonged to Donegal and Cavan in Ireland, and those of the Cumbrian mountains, the Isle of Man, and North Wales, all range N.E. and S.W. It also appears from Professor Phillips's diagram, showing the result of his examination of the joints in the mountain limestone districts of the north of England, that the great majority of the divisional planes are there in N.N.W. and S.S.E. lines.‡ A coincident range has been observed in the joints in other localities in England, and also in France; "more particularly," says Sir H. de la Beche, "in granites and grauwacke."§ I think it probable, therefore, that the jointed structure of rocks will be found to be much more connected with the directions in which igneous rocks have swelled up and been injected, and islands, mountains, and continents

their temperature to the fusing point, when the external layer, having just extended itself into the superjacent rocks by melting them into its substance, was arrested in its further extension by crystallization. Hence the external layer should often be variable, and partake of the chemical ingredients of the adjacent rocks, because time was not allowed for their thorough mixture with the general mass. In fact this layer must often be merely a layer of the adjacent rock fused down and immediately crystallized into a granite. (See note, p. 60, post.)

* De la Beche's "Report," p. 157.

† "Treatise on Geology," vol. ii. p. 258.

‡ *Ibid.*, vol. i. p. 65.

§ "Report," p. 275.

been consequently upraised, than with the magnetic meridians. If due to mere tension, it may have originated under both or one of two influences. If we conceive, what is most reasonable and consistent with observation, that the formation of mountain chains is accomplished by a slow movement, or succession of movements, prolonged during a great geological period, then we must admit that the upper layers of the gradually ascending and cooling mass have been exposed to continued or repeated pressure from below, which, of itself, would cause the partially hardened or viscid crust to crack, or would give rise to planes of inferior resistance to tension in which the mass would have a tendency to part. But there is another source of tension which may co-operate with external pressure, or exist independently of it, and that is simple contraction after crystallization on cooling.

In and near Singapore we find the stratified rocks in general elevated into low ranges of hillocks, of which the axes coincide with that of the Malay Peninsula and the Islands from Singapore to Banca. The strata have commonly been tilted up at very high angles, frequently approaching vertical. Considering the Peninsula and its prolongation in the Archipelagoes, south of Johore, as one band which has been subjected to elevatory plutonic forces,* the first external effect of these forces must have been to cause a great tension, from N.E. to S.W., across the zone, followed by a rending and displacement of the superincumbent strata, and injection of ignifluous matter along lines at right angles to that of tension, or from N.W. to S.E. The principal divisional planes must have been the result, not of a transverse tension like the first, but of a subsequent longitudinal one.†

The great rending and displacement of the strata, and the circumstance of the heads of adjoining strata being sometimes broken up and intermingled, prove that mechanical movements of great violence, and combining a horizontal vibratory with a vertical action, must have attended their upheaval. The direction of these movements must have agreed with the line of tension, because they were nothing more than the effect of the tension reaching the limit which the rocks subject to it could bear. The strata are generally inclined from S.W. to N.E., although there are several exceptions. The elevatory force therefore acted, to a certain extent, in this direction. Was there an actual propulsion of the fluid or viscid matter from S.W. to N.E., or merely an undulating motion in this direction? Such a

* Whether a simultaneous action elevated both the central granitic chains of the Peninsula, and the semi-volcanic hills along their base and to the south of the Peninsula, or the latter were due to a later subsidiary action connected with the shifting of the subterranean forces to Sumatra, does not affect the above reasoning, since the fact of agreement in direction is clear.

† See Mr. Hopkins' papers, "Researches in Physical Geology," &c.

motion is even now experienced in a slight degree along the western border at least of the Peninsula when the subterranean forces are acting beneath the western border of Sumatra.* There is a source less remote of motion in the upper portion of volcanic and plutonic fluid, or semi-fluid masses, which I have not seen noticed by geologists. When the superincumbent strata were fractured in N.W.—S.E. lines, and the fluid mass pressed into the openings, the adjoining portions would acquire a temporary motion towards the openings, or at right angles to the lines of fracture. In all cases of plutonic elevation there must either be a slow continued motion upwards as the strata insensibly give way to the pressure, or an accelerated motion when great rents in the strata are abruptly produced. In most cases the viscid granitic mass has probably been of too great extent, and the motion too slow and uniform, to give rise to any variableness of structure.

If a motion, however induced, of the igneous fluid from S.W. to N.E. be assumed, the alternations which we find in the Pulo Ubin rocks in bands running S.W.—N.E., might, perhaps, be explained on the same principle by which Professor Forbes accounts for the viscid mass constituting a glacier being zoned in the direction of its length—an explanation which Mr. Darwin has applied to the lamination of volcanic rocks of the trachytic series. In the case of the Pulo Ubin rocks, the general agreement in direction between the zones of variable mineral character and the principal joints, renders it in a high degree probable, if not certain, that, if not contemporaneous in origin, the continued action of the same cause superinduced both. This cause must have begun to operate when the mass was in a fluid or viscous state. Now as some zoned glaciers are of as great bulk as many exposed granitic masses, such as those of Cornwall or that of Pulo Ubin, we may safely consider that the influx of a viscous body of granite into fissures gradually enlarging into great cavities, would, at least sometimes, under a certain range of motion, and where the conditions assimilated to those of glacier motion, be attended with mechanical structural effects somewhat similar to those observed in glaciers, and repeated in the experiments made by Professor Forbes on other viscid substances. The conditions under which plutonic masses rise must vary very greatly, but there is no difficulty in believing that they sometimes, and particularly in masses of no great bulk, approxi-

* In the most recent instance of an earthquake of great power—that experienced on the west coast of South America in 1835, and the phenomena of which clearly proved the identity of plutonic and volcanic power—the undulations appear to have proceeded from the S.W., extending consequently in N.W. . . . . S.E. waves. Mr. Darwin says: "The fissures in the ground generally, though not uniformly, extended in a S.E. and N.W. direction, and therefore corresponded to the lines of undulation or of principal flexure."—DARWIN'S *Journal*, p. 311 (2nd ed.).

mate sufficiently to those which, in glaciers, produce parallel bands of variable tension, vertical towards the surface.

Reverting now to the analogies between the rocks of Pulo Ubin and rocks of a decided gneissose structure,* let me request that, in reference to this subject, the preceding discussion be kept in view. Mr. Darwin remarks that such facts as the vertical or highly inclined lamination of felspathic rocks, such as he observed at the island of Ascension, and which exist elsewhere, "are manifestly of importance with relation to the structural origin of that grand series of plutonic rocks which, like the volcanic, have undergone the action of heat, and which consist of alternate layers of quartz, felspar, mica, and other minerals."† The origin of this series of rocks is one of the great debatable questions of geology. As in so many other instances, both of physical and metaphysical questions, where an array of probabilities can be advanced on each side, both parties may be in the right and both in the wrong; or rather, Nature, capacious and multiplex while harmonious, can embrace and assimilate the ideas of both. If we limit our views to India, we can hardly deny an identity of origin to granite and gneiss. Upon the question generally I shall not enter, but it may help us to a better understanding of Pulo Ubin, if some facts gathered from the papers of Indian geologists, be here placed side by side with those local facts with which they appear to be connected by some general law. Dr. Voysey, one of the earliest and ablest labourers in the field, remarked in 1823: "Up to the present time I am inclined to think that both the granite and gneiss of India are contemporaneous, as they are perpetually passing into each other and have the same subordinate rocks. I think it probable they owe their difference of structure to a different mode of consolidation."‡ Dr. Buchanan Hamilton's recently published report on the Eastern Districts of Bengal confirms Dr. Voysey's view, and suggests still more important considerations bearing on the geology of the Malay Peninsula and its Archipelagoes. In reading it I was struck with several features of the hill ranges of Bengal which strongly reminded me of those of Singapore. I have been led to think that the same relation subsists between these hills and the great mountain ranges behind them—between the lower hill ranges on both sides of the Peninsula of Southern India and the central mountains—between the hills on the flanks of the Sumatra chain and the chain itself—between the hills along the coasts of the Malay Peninsula and the mountain groups of the interior; and between the hill ranges and the mountains of Australia. Some remarkable characteristics are common to all these hill ranges and groups, and every addition to our knowledge serves

* Ante, p. 42. † Darwin "On Volcanic Islands," p. 72.
‡ Brewster's *Edinburgh Journal of Science*, vol. x. p. 375.

to confirm my impression that they must be referred to one geological era and one peculiar plutonic or volcanic action operating over a region of great extent, in which Southern Africa, India, the Malay Peninsula, a large portion of the Eastern Archipelago and Australia, are included. It would require a separate paper to bring together the facts that have induced and confirmed this impression. I will here only notice some circumstances mentioned by Dr. Buchanan corroborative of Dr. Voysey's view, and bearing on the structure of the Pulo Ubin rocks. The minerals of what Dr. Buchanan terms the southern central division of Bhagalpore consist, in general, of aggregate rocks composed of felspar or schorl intermixed with quartz and sometimes with mica, and disposed in vertical strata running easterly and westerly. The quartz is not only found as a portion of the aggregate, but in parallel layers alternating with it, and even in whole strata. "In some of the strata the component parts were pretty uniformly scattered, thus forming granites, according as they contained three or only two ingredients; but in by far the greater number certain plates or flakes, as it were, contained a greater proportion of one ingredient, and certain portions a greater share of the other, forming thus what by some is called gneiss. The length of these plates is always disposed parallel to the general direction of the stratum, and the edges are vertical, or nearly so. There were also other stones, in which the component matters were disposed in what may be called striæ—that is, a great proportion of one of its component parts run horizontally through the others in lines parallel to each other, and to the direction of the stratum. Such stones have also been included under the name of gneiss.

"In many of these stones may be occasionally found vertical layers of white fat quartz, running parallel to the stratum, and entirely separating one part of the aggregated matter from the other, without producing the smallest interruption of substance; nor is the stone more easily broken there than anywhere else. In these stones, when entire, there is nothing like a schistose, or striated fracture; but in a state of decay, if exposed to the weather in certain situations, especially so that the rain may lodge on the surface, the stone gradually splits into thin plates like slate, and this seems to happen as readily to pure quartz, or to perfect granites and granitels, as to the gneiss. In other cases, again, especially where blocks have been detached, the stone decays concentrically, and, of course, losing its angles first, becomes a rounded mass." * The rocks of what Dr. Hamilton terms the northern intermediate division consist also of granites and gneiss.

The recent publication in the "Journal of the Asiatic Society of

* Martin's "Eastern India," vol. ii. p. 187.

Bengal," of Captain Herbert's Report on his mineralogical survey of a portion of the Himalayas,* has shown that gneiss is the grand constituent of these stupendous mountains, but the gneiss frequently loses its laminar character and approaches or passes into granite; a species of granitic gneiss is common, which appears very often to form the transition between granite and gneiss. The observations of Captain Herbert appear to me to tend very strongly to the conclusion that the gneiss and granite of the Himalayas were of contemporaneous plutonic origin. The gneissose structure may be simply the consequence of an excess of mica, for in most instances where Captain Herbert notices the occurrence of granite, he adverts to the diminution of the mica. Again, as mica diminishes the laminar structure disappears. Thus, at one place the gneiss gradually loses its mica and becomes an unlaminated mixture of quartz and felspar, having the aspect of quartz rock. A rock occurs, composed of felspar and hornblende in different proportions, apparently very similar to some of the Pulo Ubin varieties; and at one place Captain Herbert observed it passing into gneiss, although in general the transition is abrupt. It occasionally contains mica and even quartz. Greenslate passing into greenstone occurs frequently. The direction of the principal beds into which the gneiss is separated (true strata according to the Wernerians and Metamorphists), coincides with that of the mountain zone of greatest elevation, the dip being to the N.E. These strata-like divisions are frequently crossed by fissures at right angles to them, and sometimes by another system in a different direction. In some places, particularly in the higher regions, the gneiss, though perfectly laminar, is not divided into regular beds by parallel seams, but is crossed by fissures in all directions. In a lower zone of the Himalaya a range of granite tracts of considerable extent occurs. This zone is parallel to the direction of the axis of the mountains and the strike of the gneiss. The most eastern tract, at Chumpawat, is soft like the growan of Cornwall, and contains much felspar and little mica. Hard blocks are strewed over it. A portion of the next mass is exclusively felspar "which, it would seem, is stratified." Near Dhee, Captain Herbert describes some spheroidal blocks of great size, which are exfoliating in the same manner as those of Pulo Ubin. One of these was sixty feet in diameter. Numerous veins, consisting almost wholly of quartz and felspar, traverse the granite. Schorl abounds. The next mass, proceeding westward, is at Almorah, where granite and granite gneiss occur. A fourth mass is found at Palee, which precisely resembles those to the eastward. It appears to pass into gneiss on its borders. On

* The date of the survey is not given, but Captain Herbert was at Almorah engaged in it when Bishop Heber visited the mountains in 1842. (See Heber's "Journal.")

a line to the westward "a rock oscillating between granite and gneiss" is found. Near Dhooeet the rock development is so interesting in itself and bears so much on the subjects discussed in this paper that I shall cite Captain Herbert's description. "In a geological sense the rock may be called a gneiss, but it exhibits small patches (forming regular transitions amongst themselves) of the most regular micaceous schist (earthy type), and, again, of the most legitimate granite (growan). These three rocks, so different in composition, in mineralogical character, and in supposed geological origin, may be here observed in the compass of a few yards all naturally (mutually?) interchangeable, while nothing like a veinous appearance can be attributed to any of them." On the same zone with the preceeding masses, but at a great distance to the westward, the Choor Peak, which rises to the height of 12,000 feet, is composed of granite.

The zone of gneiss is twenty-four miles in breadth, and includes all the higher summits of the Himalayas. The gneiss was seen at altitudes of from 2800 to 25,709 feet. To the southward succeeds a zone of about the same breadth formed principally of micaceous, chloritic, talcose and hornblendic schists, but including limestone and the granitic tracts formerly mentioned. These types vary exceedingly in themselves, and in their transitions into each other. This schistose tract is succeeded by a band of sandstone which is referred to the New Red. The general dip of all the rocks from the sandstone to the gneiss is from 20° to 30° to the N.E., or *towards* the great central plateau of Asia. The lowest system is therefore the new red sandstone, and the highest the gneiss. Captain Herbert seems to consider that this fact negatives the idea that the planes of apparent stratification are really what they seem, and he is obviously rather disposed to refer them to a similar action to that which produced the fissures transverse to them. It is scarcely possible to conceive that a continuous mass of strata, about sixty miles in horizontal breadth at their present inclination, which would give an original vertical depth of about *sixteen miles*, should have been raised on its edge and made to move through an arc of 150° to 160° until it rested in its present position, with the gneiss, originally sixteen miles below the sandstone, now as many miles above it. Such displacement does no doubt sometimes occur on a great scale. Thus, in the Alps, and, as we learn from the great work of Sir R. Murchison and M. de Verneuil, in the Ural mountains, thick masses of strata are in some places overturned, and, on the flanks of the latter mountains, the order of superposition is thus sometimes inverted. But such cases cannot justify us in supposing that in a similar convulsion on a transcendent scale the Himalayas originated. The metamorphic theory might get rid of the difficulty if it could be shown that the gneiss and other rocks resting on the new red sandstone

were really more modern sedimentary rocks! * Until we possess further light we seem justified in considering that the researches and conclusions of Captain Herbert tend to prove that the passage of gneiss into granite or the reverse may be determined simply by the variable proportions of mica and the conditions of crystallization from a common state of fluidity or viscidity. A portion of the Himalayas has more recently been examined by Dr. MacClelland, and he declares positively that the granite is stratified, the strata being nearly vertical and appearing to be composed of nodules around which concentric layers are wrapped. He states also that *the gneiss rests on the granite in conformable strata*, and that the two rocks pass insensibly into each other.†

The metamorphic theory starts on a basis of fact and is demonstrably true up to a certain limit. But when applied to mountain masses of enormous thickness we leave that limit far behind. The conversion of the Himalayas from soft sedimentary into crystalline matter cannot be explained by the plutonic action of granite on known aqueous rocks, even where it has pervaded them to the thickness of a few hundred yards. If the Himalayas were metamorphosed, the process must have been different, or plutonic influences must have been in operation of far greater potency, and having in some respects a different mode of action. There is an unsatisfactory want of definiteness about the metamorphic theory even when expounded by its great advocate M. Lyell. If the ingredients of gneiss were originally arranged as we find them at present, then it only differs from the Wernerian theory in substituting a posterior for an aboriginal consolidation, and places gneiss on the same footing with any of the secondary or tertiary sandstones that have assumed a stony texture since they were deposited from water. On the other hand, if it takes a bolder grasp of the difficulty and asserts that the whole structure of the rock, the regular form of its crystals, and the separation of those of different species into alternate laminæ, are due to the mass having been melted into a viscid state and subjected to crystallization *de novo*, it appears to come so close to direct plutonic formation that it is not easy to see where room is to be found for a vast metamorphic laboratory on the confines of the latter. Its

* Dr. Buckland estimates the thickness of *all* the European stratified rocks, including the primary, at ten miles.—*Bridgewater Treatise*, vol. ii. p. 39.

† M. Calder describes the granite in the district of Tinevelly in Southern India as "rising above the surface in remarkably globular concretions and in *perfectly stratified masses*," forming low detached hills near Palamcotta, the strata of which dip at an angle of about 45° to the S.W. (Brewster's *Edinburgh Journal of Science*, vol. x. p. 138.) Other writers on the geology of India mention the occurrence of granite in many places with a similar appearance. Humboldt, in his work on Central Asia, describes the remarkable structure of the granite surrounding the mass of the Altai. At Kolyvan a large grained granite is "regularly stratified."

advocates have probably seen and shrunk from the difficulty of defining the conditions necessary for the existence of a metamorphic region subsidiary to the plutonic, and so wonderfully related to it that—while in all unequivocal instances of change in sedimentary rocks from the neighbourhood of a plutonic fluid, the power of the latter has been confined to the narrow limit which we now see* to be altered, or, beneath the present base of the rock, has entirely reduced and transmuted it—in the region in question the power of the plutonic fluid was so much weaker that the original strata of the sedimentary rocks subjected to its influence were left unobliterated even up to the plane of contact, and yet so much greater that the substance of the entire mass, throughout thousands of yards in thickness, was melted, re-crystallized and arranged in laminæ.† Until these conditions have been defined and illustrated by facts, it is not unreasonable to suspend our judgment, and to believe that the tendency of plutonic rocks having the same ingredients as gneiss to a stratified or zoned structure, and even, where mica is abundant, as in the latter rock, to a laminar arrangement, may hereafter be found to explain the origin of such enormous bedded and laminated crystalline masses, as the Himalayas exhibit, more simply than the theory of metamorphism as at present developed.

The *beds* of gneiss are no doubt devoid of that regularity which divisional planes possess, and in this respect resemble strata of

* Mr. Lyell is not able to adduce an instance of alteration beyond 400 yards from the point of contact, and this he admits to be an extreme case.—"Elements," vol. ii. pp. 403 and 411.

† It is well ascertained that stratified rocks of a limited thickness may be metamorphosed by granitic influence without losing their division into strata; but the difficulty is in conceiving a plutonic action so powerful as to extend to the upper part of a mass of some miles in thickness and reduce it to "a state of semi-fusion" (Lyell's "Elements," vol. ii. p. 411), without destroying all vestiges of the original strata in the lower part. The plutonic influence may have been conducted through fissures, but in that case it would be necessary to show that a system of veins ramifies throughout the Himalayan mass, for instance, almost as complete as those which distribute the blood throughout the body of an animal. If, as seems probable, there are, between the great plutonic tracts of elevation, extensive tracts suffering depression (such as those covered by the Bay of Bengal or the Indian Ocean, generally), their rocks must be exposed to plutonic influence laterally as well as from below, and this would reduce the difficulty. Mr. Lyell says, that "granite may have been another result of the same action (*i.e.*, that which produced gneiss by semi-fusing sedimentary strata) in a higher state of intensity, by which a thorough fusion has been produced; and in this manner the passage from granite into gneiss may be explained." Now, when in the Himalayas we find miles, and in Scotland great depths, of gneiss and its associated rocks, containing frequent beds of granite, it is not easy to conceive how the metamorphic influence in ascending through masses of such thickness, should be so unequal as to melt down some portions, while only half melting the bulk of the strata. In the lower regions this is quite conceivable, but when we find the same inequality in sections of the mass near the summit—that is, many miles in some cases above the level whence the action emanates—the theory seems to halt.

deposition,* but it appears to me they are not analogous to the divisional planes which alike penetrate plutonic rocks and the strata above them usually in directions approaching to vertical, and which also exist in gneiss; but to those beds in granite which von Bugh considers as always conforming to the external surface of the granitic bubble, of whatever form that may be, and which Sir H. de la Beche describes as being in Devonshire and Cornwall actually parallel to the strata of superjacent sedimentary rocks where the plane of contact can be seen.†

* Lyell's "Elements," vol. ii. p. 390. The strongest argument in favour of the sedimentary origin of gneiss is that insisted on by Professor Phillips. He says that "in gneiss and mica schist, the felspar, quartz and mica are rolled or fragmented masses, showing clearly that the crystals had been exposed to attrition previous to their deposit" (article "Geology" in *Penny Cyclopædia*, vol. xi. p. 139, and "Treatise on Geology," vol. i. p. 112). It is clear that such must be the condition of the ingredients of sedimentary rocks derived from the wasting of granite, and subsequently consolidated so as to resemble gneiss, as in those ascertained instances where injected granite has been the agent of solidification. But if the fact be universally true with respect to gneiss, it is fatal to the hypothesis of the plutonic origin of that rock in any case. It is a two-edged weapon, however, for it would destroy the metamorphic theory also. The "Treatise on Geology" was published in 1837, and the second edition of Mr. Lyell's "Elements" in 1841, but in noticing some objections to the metamorphic theory Mr. Lyell does not allude to Professor Phillips' argument. It is to be presumed, therefore, that he discredits the fact on which it rests, and as I do not find it mentioned by Professor Jameson, who has studied gneiss carefully, nor by other writers, we must wait for further investigation. Professor Jameson, on the contrary, in Murray's "Encyclopædia of Geography," published in 1834 (p. 219), positively states that the concretions of limestone, gneiss, mica-slate and other rocks of the primitive class have the same characters as those of granite—*i.e.*, "they are joined together without any basis or ground, and at their line of juncture are either closely attached together or are intermixed," and frequently branches of the one concretion shoot into the other or the concretions mutually impress each other.

† The study of plutonic rocks and of mineralogy appears to have been somewhat neglected by geologists of the English school, and, making due allowance for the influence of Werner's theories, I should be disposed to give much weight to the inferences of the Scottish geologists who, animated by the ardour first kindled at Freyberg, during many years laboriously and minutely explored the mountains, coasts and islands of their native country. Gneiss is largely developed in the north of Scotland, and frequently associated with granite, and the analogy between them must be very strong to admit of Professor Jameson declaring that "granite occurs in masses, often many miles in extent, surrounded by gneiss, mica-slate, and clay-slate, and so connected with these rocks, that the whole may be considered as the result of one grand process of crystallization—that is, the granite is of contemporaneous formation with the gneiss as the gneiss is with the superimposed mica-slate, and the mica-slate again with the clay-slate which rests upon it. In other instances the granite alternates in beds, often of enormous magnitude, with gneiss, mica-slate, clay-slate, and other primitive rocks, or it traverses these in the form of veins." Again, "granite is sometimes disposed in great beds in gneiss and other rocks, and occasionally these beds appear divided into strata. In other instances, in granite mountains we observe, besides the tabular, globular and other structures, also the stratified; but this latter is, in general, less per-

We have seen that Von Buch refers these beds to contraction of the substance of the granite at a time when it had a degree of consistence "which in most cases was far removed from the condition of fluidity." But may not the internal structure of granite and other hypogene rocks be primarily due, not to the merely mechanical effect of contraction on cooling, but to the original conditions of crystallization? Reversing the Neptunian theory of the deposition of the primary rocks from a state of chemical solution in a hot fluid upon the *upper* surface of the earth's crust, may or rather must we not conceive them to have been gradually deposited on the *under* surface of the crust? We must suppose that crystallization did not at once extend throughout the whole of any mass of plutonic fluid, but commenced in a layer nearest the refrigerating surface of the superincumbent rocks, and thence slowly extended by accretions from below. Dr. Lardner says that

fect than what is observed in gneiss and other rocks." It is true Professor Jameson then believed in the Wernerian theory (which he has since largely abandoned, for in his latest classification he distributes the hypogene rocks into Plutonian and Neptunian), but he would not misrepresent facts, and the facts which he observed in Scotland, seemed to him to demonstrate the derivation of granite and gneiss from a common origin. Now this conclusion is quite separable from the ulterior speculation as to the nature of the origin; and in the present advanced state of our knowledge it seems to require us to substitute a plutonic for an aqueous, without the intervention of the metamorphic, theory. Let me not be understood, however, as desirous of embracing a direct plutonic theory in the place of the metamorphic. All I maintain is that there is a limit where it ceases to be a theory and becomes an hypothesis, and this limit is narrow compared with the vast province over which its leading exponents extend it. As an hypothesis it is highly valuable, having already guided investigations which have been rich in results. Its legitimate domain, of which the boundaries are defined by geological demonstration, is constantly enlarging; and, in the present palmy condition of the science, we may hope that geologists, in a few years, will be able to determine whether the bulk of what are termed the primary or hypogene stratified rocks be semi-plutonic (*i.e.*, metamorphic) or entirely plutonic, in the same sense in which granite is.

At the present day it is not so much dogmatism, prejudice, or a reckless spirit of speculation in men that maintains rival theories in geology, as that higher metamorphic power of Nature which is ever reproducing the elements of matter in different shapes, and which so often assimilates her most diverse processes in the phenomena which result from them. We may seek to isolate particular processes, set the stamp of a name and a theory upon them and extend their exclusive dominion, but still the ministers of Nature work together and in harmony, or rather in them the unity of the Absolute Will still manifests itself. We term some rocks plutonic and some volcanic, and presently we are forced to say that they pass by insensible gradations into each other. As our knowledge extends, all this will probably appear but a play of words. Restraining speculation, we may consider it as established that the plutonic and volcanic rocks are the produce of the same process; that congelation and deposition may alike cause the stratified structure; and that by a chemical action, often slight, igneous rocks may, *in situ*, become assimilated to sedimentary, and sedimentary rocks may, *in situ*, become assimilated to igneous. Observation alone can reconstruct the history of any given rock, and determine the limits within which transmutations are effected in Nature.

"sudden expansion in freezing is particularly conspicuous in the crystallization of solids which shoot into prismatic forms. The process of crystallization in laboratories is for this reason frequently attended with the fracture of the vessels in which it is conducted. It may be taken as the general truth, to which however there may probably be some exceptions, that bodies which crystallize in freezing undergo the sudden expansion here mentioned, and that bodies which do not crystallize in freezing for the most part suffer a sudden contraction." * *A priori*, therefore, it might be predicated as probable that the granitic fluid, like water, expands on congelation. This predication seems to be verified by observed phenomena. If the granite contracted on crystallization, the crystals formed at and near the surface of refrigeration would sink, the hot fluid from below would constantly ascend to the surface, and when the central heat of the earth was so much lowered as to allow the crystals to reach the centre of gravity in a solid state, a nucleus would there be formed which would gradually increase until the globe was solidified from the centre to the circumference; or, at all events, no permanent solidification would take place until the temperature of the whole fluid was reduced to the point of congelation.† Under such conditions, if the globe were originally a homogeneous fluid, and granite be the constant result of the internal congelation of that fluid, no solid *crust* could ever have been formed. But assuming the existence of the crust apart from all theories of its origin, and limiting our view to the great lakes or oceans of effused rock beneath particular portions of the crust or occupying great cavities in a solid globe, which are all that Mr. Lyell will recognize as necessary to explain plutonic and volcanic phenomena, it is obvious that, until the temperature of the whole lake or ocean were reduced to that of incipient congelation, the upper layer would retain its heated fluid condition. If so, the igneous fluid would have time to penetrate fissures to great distances in the same way as that of trap. But granite veins are generally found to be short and sinuous, a circumstance which contradistinguishes them from dykes of trap, and which seems only explicable on the assumption that the injective tendency of the fluid was counteracted by its tendency to congeal at the surface from contact with the rocks above, and to remain there in that state in consequence of its expanding or becoming less dense

* "Treatise on Heat," p. 131.

† This appears in granite to be about the same as that of iron (de la Beche's "Report," p. 191), which is stated in the table appended to Dr. Lardner's "Treatise on Heat" (p. 415) to be 21637° F., but which appears by the improved pyrometer of Professor Daniel to be only 2786° F. (*Penny Cyclopædia*—article, "Freezing and Melting Points.") It should be observed, however, that granites vary very greatly in fusibility. Trappean rocks were found by Sir H. de la Beche to fuse at the same temperature with copper, or 1996° F.

when it assumes the solid form.* The phenomena which have been discussed in this paper disclose two structures in hypogene rocks, the laminar, and the globular passing into the cuboidal. Now the first may be due, in the case of gneiss, simply to excess of mica or to this in combination with other causes which have been adverted to. The second is clearly the original mode of crystallization, if the above views are correct, or if it be granted, without reference to them, that granite solidifies from the surface downwards. In the upper layer of the granite fluid, nuclei are formed, which gradually enlarge till their mutual expansion prevents further increase, and the layer, bearing the form of its mould,† is complete. This layer is the upper bed or stratum of the granite, and others are successively formed beneath, each, of course, conforming to that above it. The spheres, not only when first formed, but during the long period in which their ingredients retain a viscid consistency, will, from the expansion consequent on crystallization, be exposed not only to mutual lateral pressure but to pressure from beneath, and this will tend, according to the rate of refrigeration and other circumstances, more or less to obscure or even obliterate the spherical form. Where there is a considerable proportion of mica the concentric laminar arrangement will still be preserved. I cannot follow out this view here; but the experiment on the gradual cooling of molten rock first made by Mr. Gregory Watt, and frequently repeated since, would seem to explain all the gradations of igneous rocks. With refe-

* The granite veins of Cornwall and Devon seem to demonstrate that a crust must have been formed while the granite beneath retained its fluidity, for it not only sends veins into the slates, but is itself traversed by veins of the same kind of granite. These are also sometimes continued in the slate above.—DE LA BECHE'S *Report*, pp. 171, 2.

From the point of fusion of granite being very high compared with volcanic rocks, and, I presume, as high as that of any sedimentary rocks, it follows that so long as the temperature of granite is above that point, it will continue reducing the incumbent rocks at the plane of contact into its own substance, and will only cease to do so when it is on the point of ceasing to be a fluid. Hence, probably, the shape of the veins. They were filled with granite when its temperature was reduced to that of incipient congelation, and when the fluid had, consequently, become thick. They show, as it were, its last efforts in its fluid state to melt into the rock above it. Even where the granite fluid at a temperature above 2786° entered a straight mechanical fissure or crack in any rock, it would immediately begin to melt the sides. The veins are therefore more pyrogenous than mechanical. Trappean fluid, on the other hand, might remain in a fluid state long after its heat was inadequate to melt the adjacent rocks. It might therefore be forced into fissures without altering their previous form. Trappean veins might thus be considered as generally mechanical—granite, as generally pyrochemical, for the irregular distribution of chemical ingredients in a rock would affect the course of granitic veins in it. From the great difference in the fusing point of granite and trap, it probably also results that the former is never found as an overlying rock, whereas the latter, from its retention of fluidity 790° lower in the thermometric scale, admits of being impelled through fissures and spread over the surface.

† See note in Appendix i. p. 69.

rence to the hypogene rocks, in order to conceive how the different species may be produced from igneous fluid beneath the earth's crust, we need only consider under what different conditions the fluid must have existed as to tranquillity, agitation, or motion—the extent and form of refrigerating surfaces—the nature, thickness, and pressure of the refrigerating masses themselves, whether rock, or sea, or both—the rate of diminution of temperature—and the proportions of chemical ingredients. Many of these conditions may have varied in different portions of the same great fluid mass, and at different stages in the process of its crystallization and solidification. The phenomena attending Mr. Watt's experiment even seem to show that the globular, cuboidal, or prismatic *concretionary* structure of micaceous granite might pass into the laminar gneissose structure merely through oscillations in temperature during solidification. An analogous passage from nodules into layers, and, in the latter, the arrangement of the crystals of one of two or more different minerals in continuous parallel laminæ, characterizes some volcanic rocks.

If expansion on crystallization be attributable to the nether hypogene fluid masses, and they are gradually solidified from above downwards, a slow upheaval of the superincumbent crust must attend their solidification when they are of sufficiently great extent. This may be the cause of the elevation of Scandinavia and other countries, at present in progress.

Whatever may be the origin of the bedded structure of the hypogene rocks, it is to a similar stratification, combined with the vertical joints, that the forms assumed by the exposed masses on Pulo Ubin must probably be referred, and to these I now finally return.

The blocks protruding from the hills or ranged along the shores of Pulo Ubin are more solid and less decomposable masses and nuclei, of which the forms, and the directions of the sides and axes, have, in almost every instance, been determined by structural planes, and which remain after the surrounding rocks have disintegrated and been washed away. With respect to the latter, it is obvious that while the island has been extending by the growth of alluvium in its bays, its more open coast has been slowly retreating, so that what was once a part of the solid land is now a band on its border washed by the sea, but still exhibiting numerous rocky remnants. The larger masses still evidently occupy their original positions. Frequently their seaward face is curved. Sometimes another mass stands behind merely separated from that in front by a chasm whose sides are parallel. With respect to the decomposition of the rocks on the hills, the soil is entirely derived from this source with the exception of a very slight superficial mixture of vegetable matter, which in many places is absent. In general, however, the blocks that remain are

decomposing with exceeding slowness. One exception I noticed in the N.W.—S.E. side of the rock described at page 33. The laminæ being inclined inwards, in disrupting by their own weight, fall some feet in front of the base, where a long mound of earth has consequently accumulated.

I have now only to revert to the grooves. The circumstances attending them which any hypothesis of their origin must explain are these: their general prevalence; the existence, however, of exposed rocks devoid of them; their being commonly confined to the sides facing the exterior of the island, although sometimes found on other and even on all sides of a rock; their great depth and regularity; their general coincidence with divisional lines; their conformity to the course of rain; and their antiquity. It is this last circumstance which, presenting at the outset a great difficulty, leads, on further consideration, to what I consider the true explanation. That meteoric influences have been the great agents of erosion I have already suggested. But the antique, permanent character which is impressed on the great majority of the rocks, their vegetable coatings, the hardness and sharpness of the external edges of the grooves, and the absence of all indications of the process of excavation being at present in progress, prove that the rocks must have existed under very different conditions from the present, to enable atmospheric forces to produce results of such magnitude. The considerations which have hitherto occupied us in the concluding portion of this paper appear to me to indicate what those conditions were. The composition and structure of the external rocks, unveiled by the action of the sea on the beach, show zones of soft rock,* rows of globular decomposing masses, and of harder ferruginous spheroids, &c., susceptible of being detached, and a general tendency to perpendicular division. If, therefore, we conceive the external layer of the island, when it first became exposed to decomposition, to have resembled in character the zone that has been laid open for our inspection along the beach, it is easy to comprehend how the wasting away of the more decomposable parts might at last leave exposed masses, including bands of the less stubborn material already partially softened or disintegrated underground, and that the action of the atmosphere and rain torrents would gradually excavate the more yielding portion until the solid remnants exhibited their present shapes.

The grooved and striated rocks of Europe are by some geologists supposed to have been caused by the action of the great and rapid waves, called waves of translation, induced by the sudden

* Some rocks may be seen along the beach with chasms two or three feet wide, the sides being quite hard, and the bottom a soft decomposed substance. In such cases a zone of rock, differing in composition from that adjoining, has evidently been gradually decomposed and washed out.

elevation of the sea-bed and loaded with detritus. Now although in Singapore there is ample evidence of violent movements in the position in which we now find the stratified rocks,* we can hardly conceive the Pulo Ubin rocks to have been subjected to these movements since their consolidation. The first hurried view of a portion of the masses at the quarries left the impression that rocks had been shattered and separated by such forces. But I am now satisfied that, with some slight exceptions due to decomposition and consequent alteration in the balance of the different parts of some of the larger rocks, they all occupy their original relative positions, and even their original absolute positions with reference to the horizon, although the level of the whole island and adjacent tract has probably shifted. At all events no violent vibratory movement has affected the island since the joints were formed and the mass stood above the surrounding tract. I cannot think that a wave of power adequate for the excavation of the channels could have been generated by a movement which would have left the projecting rocks undisturbed, or even that the force of the wave itself could have met with such resistance from the smaller rocks as to enable it to grave the channels instead of displacing the rocks. No doubt a large proportion of these rocks were formerly firmly wedged into the mass of the island, but many must have been more or less isolated, as the channels embrace more than one side. The undulations, if any, attending the elevation of the island and inducing waves of translation (if they were sufficiently violent, and the upheavals sufficiently great) would probably be in the direction of the peninsula; and, after the island and the adjacent hills of Singapore and the mainland rose above the sea, waves might act on both sides of the island transversely to the line of undulation. But as the principal fissures and soft bands are in the same direction, the circumstance of the grooves mostly coinciding with it does not peculiarly favour the application of the wave theory. But in rejecting its applicability, we may, at the same time, allow that the action of the waves, whether ordinary or extraordinary, as the island gradually, or by abrupt steps, rose above the sea, may have assisted to a considerable degree, both chemically and

* The nearest point at which this displacement can be observed is in the vicinity of Singapore Town, about eleven miles to the south-west of Pulo Ubin. But the whole intermediate country is broken up in the same manner, so as to present the appearance, in many places, of a tempestuous sea, and the billowy hills are throughout so connected and similar, that there can be no doubt that the forces which elevated them operated during the same period over a wide area, including the southern portion of the peninsula and its outlying archipelagoes. This tract, I have already said, is probably but a small section of a vast region, embracing India on the one side and Australia on the other, in which similar forces were in activity during the same period, and produced similar effects.

mechanically, in wearing the channels. On the coast of Singapore opposite the eastern extremity of Pulo Ubin, and only a mile distant, there is a layer of pebbles evidently marking the last step in the elevation of the land. Such pebbles driven to and fro by the waves against the rocky beach of Pulo Ubin would be instrumental in deepening hollows.

Since a portion of this paper was written I have seen, in the number of the *Quarterly Journal of the Geological Society of London* for May last, in the President's Annual Address to the Society, a notice of the observations made on the coasts of Sweden and Norway, last year, by M. Durocher. M. Durocher found along a portion of the coast, and particularly in the islands off it, deep channels and furrows in directions from N.W. to S.E., some ten to twenty inches wide, and five to ten feet deep, "effects of erosion," says the President, "on a much greater scale than I remember to have read of before." The resemblance of these channels to those of Pulo Ubin is not confined to their unusual size, but is carried out in the circumstance of the sides of the interior of many of the channels being grooved in the directions of their longer axes, of their sometimes dividing into two or more branches which afterwards re-unite into one, of many being rectilinear, but many being undulating and bent in short waves, and lastly of the axes of the channels and the striæ in their interior having the same general direction as the depressions of the neighbouring country. Mr. Horner refers to the *Bulletin of the Gëological Society of France* (tome iii. p. 65) for some important views as to the causes of these phenomena. I have not access to the *Bulletin*, and cannot venture, in my ignorance of the rocks and all other details, to make any further remarks on the analogy between the channels described by M. Durocher and those of Pulo Ubin; but it is probable that the structure of the rocks will be found, in the one case as in the other, to have facilitated the erosion of the channels, and partly given them their directions.

SINGAPORE, *Oct.* 1, 1846.

APPENDIX.

Note to p. 65.

With reference to the views in the text, it may be said that no congelation could take place till the temperature of the whole mass was at that of fusion, because until then there would be a constant interchange of level between the successive upper or denser layers and the lower. Without resorting to the supposition that gradual expansion, as in water, may begin prior to congelation, it seems clear that in such a dense fluid as molten granite under great pressure, the passage of one portion through another must be effected with difficulty and very slowly. Between the level at

which the maximum temperature ceases, and the refrigerating surface, there must, in such a fluid, be an insensible and very gradual diminution of heat, and deep masses may be viewed as consisting of layers of considerable thickness in any one of which the temperature is almost uniform, and between which and the adjacent layers the transfer of heat is exceedingly slow. It may be proper to examine this further, because when the text was written I overlooked the chapter in Mr. Lyell's "Principles" (chap. xix. book ii.) in which he controverts the doctrine of the internal fluidity of the globe by an argument which is partially opposed to some of the above views, although it does not interfere with my general inferences. Its object is to prove that no consolidation at the surface of a fluid mass like the globe could take place, till the whole had been reduced to a uniform heat or about that of incipient fusion. It appears (note, page 440) that M. Poisson had, independently, adopted the same argument, and that he imagined that if the globe ever passed from a liquid to a solid state by radiation of heat, the central nucleus must have begun to cool and consolidate first. The principal facts on which Mr. Lyell relies are, that so long as a fragment of ice remains in water, the temperature of the water cannot be raised above 32°, and that Professor Daniell found that while a solid piece of iron, &c., remained immersed in a molten mass of the same substance, its temperature could not be raised above the melting point. The remarks in the text relating to the origin of granitic structure do not require me to assume that the temperature of a granitic mass was ever much above that of its melting point, a temperature, it should be recollected, higher by 790° than that at which basalt can exist in the fluid state; and as Mr. Lyell does not seem to deny, with M. Poisson, the possibility of a crust being formed when the general temperature is near that of fusion, his remarks are not inconsistent with the hypothesis that granite has crystallized in successive layers. Even if the granite fluid approached to the condition of water, instead of being comparatively very dense, the congelation of the first layer would tend to maintain the fluidity of the next for some time, not merely by arresting the interchange of particles by which its heat had hitherto been transferred to the surface, and substituting for it the process of conduction, but by adding to it the large quantity of latent caloric expelled in the act of congelation. With reference, however, to Mr. Lyell's argument, it may be remarked that the conditions to which a fragment of ice or iron are exposed when *immersed in* a fluid mass of the same substance, and heat constantly added from a source close to it, are very different from those of a crust resting *on* the same fluid, in contact on one side with a refrigerating surface, and on the other with one to which caloric slowly ascends from a source far below. The immersed fragment is enveloped

in a rapidly heating medium. The floating crust is between two media, one slowly giving heat, the other abstracting it. The period, therefore, at which a crust can be formed is not determined simply by the fusing point (that is, necessarily postponed until the whole mass has reached its lowest fluid temperature), but is determined by the relative rates at which heat ascends through the substance in its fluid state, and is conducted from it when in its solid state. The latter is an indeterminate quantity, depending, as it in some measure does, upon the nature of the refrigerating body. But, laying that out of view, it is evident that as the heat diminishes, the rate of its passage from one level to another will also decrease, because the motion of the particles of the fluid amongst themselves will be impeded as the density increases. Now, long before the mass generally is reduced to the temperature of fusion, the density of its higher portion may reach the point at which the rate of motion has subsided to that at which heat is given off by a solid crust. Refrigeration may come to a stage at which, while the upper layers are at and near the point of fusion, the lower may be far removed from it in proportion to the depth of the mass. Because in a receptacle of water exposed to a cold atmosphere we see a rapid interchange of particles, and the formation of ice postponed till all the lower layers have reached the temperature of about 40°, we are not entitled to conclude that in the successive layers of a deep abyss of dense molten granite there will be a similar rapidity and extent of mutual motion of particles. Even in the case supposed by Mr. Lyell, of the globe consisting of water having at the centre a temperature of 6400° which gradually decreased towards the circumference, where a crust of ice fifty miles in thickness existed, is it necessary that we should admit with Mr. Lyell that the ice would soon melt into an atmosphere of steam? In a layer a mile in thickness the temperature would not increase 1°. At eight miles beneath the ice the temperature would be only 40°. Below that the counter currents would first be encountered, but the rate of their motion in a layer a mile in thickness, in which the summit only differed from the base by 1°, would be so extremely slow as to be insensible. But, to render the cases of a globe of water and a globe of granite more analogous, the globe of water should be supplied with a refrigerating atmosphere at a temperature more than 2600° below zero, for such is the difference of temperature between that of the atmosphere (even taking that of the equator) and the fusing point of granite. With such a medium, or even one of which the temperature was calculated according to the fusing point of trappean rocks, the heat given off on the upper side of the icy crust might exceed that received from below even with a central temperature of 6400°.

III.

NOTES ON SOME SPECIES OF MALAYAN AMPHIBIA AND REPTILIA.

By Dr. F. Stoliczka.

["Journal of the Asiatic Society of Bengal," vol. xlii. (1873), ii. p. 111–26].

With Plate.

It is nearly three years ago that I had the pleasure of submitting to the Society a few notes on Indo-Malayan Reptiles and Amphibians, chiefly collected by myself along the Burmese and Tenasserim coasts, about Penang and on the Nicobar and Andaman islands. When visiting Penang in 1869, I received information of a tolerably extensive* collection of reptiles, brought together by a zealous Jesuit during a residence of about twenty years on the island. The specimens were collected either on Penang itself or on the opposite coast of the Wellesley Province. A very large number had been captured alive, and coloured drawings, taken from most of the live specimens, had been prepared. The colouring appeared to me to have been faithfully copied, and this it was which particularly excited my interest in the collection, because in many cases the colours of reptiles fade most rapidly, as soon as the specimens are placed in spirit, in others the colouring changes immediately after death, and again some alter even during life their colour, as soon as they become conscious of their captivity. In any case the coloured sketches from life seemed to me valuable, and I, therefore, resolved to buy the collection.

As soon as the formal matters were arranged, the collection of the specimens was transmitted to me, the drawings, however, were afterwards not considered to form an essential part of it, and were handed over to some one else, according to a wish of the deceased gentleman under whose supervision they were executed. After a brief correspondence it did not appear to me much use treating further about the subject. My interest in the collection has, on that account naturally enough, partly diminished, and having had other more pressing work to attend to, the specimens were for more than two years left unnoticed. More recently my friend, Mr. Stahlknecht, of Singapore, visited Sumatra, and made for me a very nice little collection of reptiles, most of which were in a beautiful state of preservation. This circumstance induced me to

* This refers to the number of specimens, but not to that of species, as I subsequently discovered.

look over my old acquaintances, and to prepare a critical list of all of them. In the old collection I only found two new species, a *Rana* and a *Simotes;* a specimen of the latter had very recently been also obtained by Mr. J. Wood-Mason's collector at Jahore, situated at the extreme south end of the Malayan Peninsula, north of Singapore Island. Mr. Stahlknecht's collection yielded a new *Calamaria.*

Thus, although I cannot say that I came into possession of a great number of new forms, there are among those which I shall place on record, a few rare and very interesting species, some of which were previously known only from single specimens, and these often were not very perfect. I may mention, for instance, *Draco quinquefasciatus*, *Podophis chalcides*, *Ophites subcinctus* and *albofuscus*, *Ablabes flaviceps*, *Oxycalamus longiceps*, &c.

I shall first enumerate all the species, and attach an (*) asterisk to those about which I shall have to say a few words.

The collection was made, as I said, to a large extent in Penang itself or in the Wellesley Province, and, judging from the examination of it, I have found no reason to doubt in any way this statement. A great many of the same species had been collected by myself in that part of the country on a former occasion; others were known to occur there from the very elaborate and extensive researches of Dr. Cantor; others again had been recorded from Malacca, Singapore, Sumatra or Java, all countries which belong to the same zoological province, and which have a large number of species common. I have not met with a single instance which would lead me to suspect that any mixture of other distant localities had taken place. Thus the present list, in connection with that of Drs. Cantor, Gray and Günther, and my own published in 1870, may be considered as fairly completing the number of reptiles and amphibians inhabiting Penang and the neighbouring Wellesley Province. Mr. Stahlknecht's specimens are from the neighbourhood of Dilli in Sumatra. In the general list I shall briefly note the localities as Penang and Sumatra.

BATRACHIA.*

1. Rana tigrina, var. pantherina, Fitz. apud Steindachner. (Novara Amphibiens).—Penang.
2.* „ fusca, Blyth.—Penang.
3. „ lymnocharis, Boie (= gracilis, Wiegm.); typical.—Penang.
4.* „ lymnocharis, var. pulla, Stol.—Penang.
5.* „ plicatella, n. sp.—Penang.

* If no special reference to literature is given, it is understood that the species is described in Dr. Günther's "Reptiles of Brit. India," or in my former paper on Malayan Reptiles in "Journal A. S. B.," vol. xxxix. pt. ii.

6. Polypedates maculatus.—Penang.
7. „ quadrilineatus.—Penang and Sumatra.
8. Hylarana erythæa.—Penang and Sumatra.
Comp. "Proceed. A. S. B.," June, 1872, p. 104. The largest specimen measures,: body 3 inch, hind-limb 5 inch.
9. Bufo melanostictus.—Penang.
10. Bufo asper.—Penang.
Largest specimen, body 5·5 inch long.
11. Epicrium glutinosum.—Penang.

SAURIA.

12. Euprepes carinatus, Schneid. = rufescens.—Penang and Sumatra.
All have a rufescent bronzy tinge and dorso-lateral pale bands.
13.* E. olivaceus.—Penang and Sumatra.
14. Riopa albopunctata.—Penang.
Exactly the same as in Bengal.
15. Podophis chalcides.—Sumatra.
16.* Gymnodactylus (? Cyrtodactylus) pulchellus.—Penang.
17. Cyrtodactylus affinis.—Penang.
Comp. "J. A. S. B.," vol. xxxix. pt. ii. 1870, p. 167.
18. Peripia mutilata, Wiegm. = Peronii, D. and B., teste Peters et Günther.—Penang and Sumatra.
19. Hemidactylus frenatus.—Sumatra.
20. Nycteridium platyurus, Schneid. = Schneideri.—Penang and Sumatra, very common.
All have less dark coloration than Himalayan or Khasi hill specimens, but are in other respects not distinguishable. Comp. "J. A. S. B.," xl. pt. ii. p. 103.
21. Gecko guttatus.—Penang.
22. „ stentor.—Penang.
23. Ptychozoon homalocephalum.—Penang and Sumatra.
24. Bronchocela cristatella, Kuhl.—Sumatra, very common.
All have 36 to 42 small equal scales in a lateral row.
25. Draco volans, Linn.—Penang and Sumatra, very common.
26.* „ quinquefasciatus.—Penang.
27.* „ fimbriatus.—Penang.
28. Hydrosaurus salvator.—Penang and Sumatra.
The light spots and bands are, in young and in old males at least, bright yellow, not white. The species is also very common on all the Nicobar and Andaman islands.
29. Crocodilus porosus.†—Penang.

† The similarity of form and colour of the young of this species with equally large specimens of *C. Pondicherianus*, Günther, is very striking. My collector recently brought several young specimens (12–14 inches) of the latter species from Arrakan, and when compared with equally large specimens of *porosus*, the former all have the snout, and also the tail, conspicuously shorter; all have only six rows of shields on the back, but there is an additional one on

OPHIDIA.

30. Typhlops nigroalbus.—Penang.
31. „ braminus.—Penang.
32. Cylindrophis rufus.—Penang.
33.* Calamaria Staklknechti, n. sp.—Sumatra.
34.* Oxycalamus longiceps.—Penang.
35.* Simotes bicatenatus.—Sumatra and Penang.
36.* „ cruentatus, Theob.—Penang.
37.* „ catenifer, n. sp.—Penang and Jahore.
38.* Cyclophis tricolor.—Sumatra.
39.* Ablabes flaviceps, Günth.—Sumatra.
40. Compsosoma (Elaphis) melanurum.—Penang.
41. „ radiatum.—Penang.
42. Ptyas korros.—Penang.
43. „ hexagonotus (Cant.).—Penang.
44. Tropidonotus quincunctiatus.—Penang.
45. „ trianguligerus, Schleg.—Penang.
46. „ vittatus. — Penang. (Günther's Colub. Snakes.)
47.* Gonyosoma oxycephalum.—Penang.
48.* Dendrophis caudolineatus, Gray.—Penang and Sumatra.
49. „ pictus.—Penang and Sumatra.
50. Tragops prasinus.—Penang and Sumatra.
51. Dipsas cynodon.—Penang.
52. „ Drapiezii.—Sumatra. (Comp. Schlegel's Abbildungen.)
53. „ dendrophila.—Penang.
54. Chrysopelea ornata.—Penang and Sumatra.
55. „ rubescens.—Penang and Sumatra.

either external edge broken up into single shields. In *porosus* the outer row of shields on either side is complete, or continuous, and, on the whole, the dorsal shields appear to be smaller. In every other respect the young of both species are identical. I have not seen an adult of *Pondicherianus*, but it ought to be looked for in Arrakan. Both have a small shield on either anterior side of the neck, it being a rudiment, or rather probably the beginning, of the anterior nuchal plates.

Besides *C. Pondicherianus*, my collector brought, among others, the following species, which I do not think had been previously recorded, from Arrakan:—

Callula pulchra.
Diplopelma carnaticum and D. Berdmorei.
Polypedates maculatus and P. quadrilineatus.
Hylarana erythræa and H. Tytleri. Both quite distinct species.
Riopa lineolata.
Tachydromus sexlineatus.
Hemidactylus (Doryura) Berdmorei.
Hinulia maculata. Also common on all the Andaman and Nicobar islands.
Lycodon aulicus (black variety).

56. Psammodynastes pulverulentus.—Penang.
57. ,, pictus.—Sumatra.
"Colub. Snakes," p. 251. Exactly agreeing with Günther's description.
58. Lycodon aulicus.—Penang.
59.* Ophites subcinctus.—Sumatra.
60.* ,, albofuscus.—Sumatra.
61. Bungarus fasciatus.—Penang.
62. Adeniophis† (Callophis) intestinalis.—Penang.
,, ,, bivirgatus.—Penang and Sumatra.
63. Xenopeltis unicolor.—Sumatra.
64. Python reticulatus.—Penang.
65. Hypsirhina enhydris.—Penang.
All specimens have an almost continuous dark line along the middle of the lower side.
66. Hypsirhina plumbea. (Very variable.)—Penang.
67.* ,, [Ferania] alternans.—Sumatra.
68. Fordonia unicolor.—Sumatra.
The young are brownish with numerous dark dots.
69. Cerberus rhynchops.—Penang.
70. Homalopsis bucata.—Penang.
71. Hipistes hydrinus.—Penang.
72. Hydrophis robustus.—Sumatra.
73.* Trimeresurus Wagleri.—Penang and Sumatra.
74. ,, erythrurus.—Penang.

RANA FUSCA.

Comp. Anderson in "P. Z. S. for 1871," p. 197.

Rufous brown above, with a pale longitudinal dorsal streak, broad in front, narrow towards the posterior end; limbs above somewhat indistinctly variegated and banded with darker brown, posterior side of femora with closer and darker variegations. Lower side uniform whitish, except a few dark spots on the lower lip, but the front-end of the lower lip has a conspicuous white spot, as stated by Blyth.

The nostrils are much nearer the snout than the eye; the tympanum is smaller than the eye, but quite distinct in a nearly full grown specimen; skin above and at the sides of the belly with few scattered slightly enlarged tubercles; lower side perfectly smooth. The first and second fingers are slightly shorter than the third and fourth respectively; the second is shortest. The metatarsus has a single, inner, marginal, elongated tubercle. The first and fifth toes are fringed externally, but the tarsus has no fold. The toes are entirely webbed and their tips very distinctly swollen.

The length of the body equals the distance from the vent to half the length of the tarsus.

† See Peters, in "Monatsb. Berlin Akad.," 1871, p. 579.



Figs 1, 1a, 1b Rana plicatella, n. sp., Penang, p. 77.
Figs 2, 2a, 2b, 2c. Calamaria Stahlknechti, n. sp., Sumatra, p. 80.
Figs 3, 3a, 3b, 3c Simotes cateniferr, n. sp., Malay Penins. p. 82.

S. Sedgfield, Lith: Calcutta.

RANA LYMNOCHARIS, *var.* PULLA.

Comp. Stoliczka, "Journ. A. S. B.," vol. xxxix. pt. ii. 1870, p. 144.

Since the publication of my notes on this variety I have received two other specimens from Penang. The form of the body, the teeth, the structure and general coloration exactly agree with typical *lymnocharis*, except that in one of the specimens the four dark bands on the upper side of the femora are well marked and somewhat narrower than in the other, in which the coloration is typical. In both, the lower lip is spotted and the chin variegated with dusky. Neither of the specimens has a dorsal pale streak.

One of them measures, body 1·35 inch, which is only one-tenth less than the distance between the vent and the metatarsal tubercle, the total of the hind-limb being two inches, while in a specimen of typical (half-webbed) *lymnocharis*, of which the body is also only 1·35 inch. the distance between vent and metatarsal tubercle is 1·15 inch, but the total hind-limb is 2·2 inch. Thus in *lymnocharis var. pulla* the metatarsal bones are longer and the fourth toe, on the contrary, much shorter. than in typical *lymnocharis*. In the former also, as previously noticed, the toes are nearly fully webbed, the web reaching to very near the tip of the third and fifth toes, but only to the base of the penultimate joint of the fourth toe.

The other specimen has the length of the body 1·3 inches, which is equal to the distance between the vent and the heel, and the total hind-limb is 2·17; thus very nearly equal to that of *lymnocharis*, only differing from it by the fuller webbing, the web reaching fully to the middle of the penultimate joint of the fourth toe. In this specimen also the tips of the toes are all remarkably swollen. All other characters are exactly as in typical *lymnocharis*.

These variations appear to me to indicate that they are progressive or undergoing certain changes according to the requirements of the animal, and that we are, therefore, not entitled to give them a specific value, unless they become permanent. I look upon this longer-limbed, shorter-toed and fuller-webbed hill form of *lymnocharis* as a small (*pulla*) local variety, possessing certain peculiarities, in exactly the same manner as the Andaman and Nicobar variety of the same species. (Comp. l. c. p. 142 *et seq*., and "Proc. A. S. B.," June, 1872, p. 102.)

RANA PLICATELLA, n. sp. Pl. xi. Fig. 1.

Body moderately stout with longish hind-limbs and swollen tips to the toes.

Head large, snout obtuse, with the canthi rostales rounded; nostrils lateral, oval, somewhat directed upwards, nearer to the tip of the snout than to the eye; eye large, prominent, its longer diameter is slightly more than the distance between it and the

nostril, but it is equal to the width of the upper side between the eyes. Tympanum naked, as large as the eye.

Head smooth above, hinder half of the eyelids tuberculated; body above with about eight longitudinal somewhat interrupted folds, with numerous small tubercles between them; limbs also smooth above, with the exception of the posterior halves of the tibiæ, which are tubercular; chin in front, with a few scattered, minute tubercles, a few others exist on the side of the belly, and the hinder part of the sacral region is densely studded with small plicated tubercles; the remainder of the under side is smooth.

The length of the body is very nearly equal to the distance between the vent and the middle of the tarsus; the fore-limb is equal to the distance from the tympanum to the groin. The first finger is scarcely shorter than the third, the second and fourth are subequal. There is a slight fold on the inner lower edge of the tarsus, and one along the outer edge of the fifth toe. The tarsus has a single, inner, elongated, marginal tubercle. The toes are about three-quarter webbed, the web reaching on the fourth toe to scarcely beyond the base of the third ultimate joint; on all the other toes it extends to the last joint, but it is deeply emarginate between all of them. The tips of all the toes are much swollen; the length of the fourth, measured from the base of the tarsus, is slightly less than half the length of the body.

Lower jaw with two fang-like projections directed inward. Tongue elongate, much broader towards the tip than at the base, terminating with two moderately-sized projections. Vomerine teeth in two short oblique converging series. Sacral diapophyses not dilated.

Above, greenish brown, with a dark band from the nostril through the eye, continuing behind it; limbs with numerous transverse dark bands; they are somewhat ill-defined on the upper arm; on the lower arm there are three or four very short ones, six on the femur, five somewhat more distant ones on each tibia, three on the tarsus, one on metatarsus and a few more on the outer side of the toes. The hinder sides of the femora are densely and rather minutely variegated with dark brown; a horseshoe-shaped yellow mark, open below, round the anus; folds on the tarsus and outer toe also yellowish; lips indistinctly variegated with pale and dusky; lower side uniform white, except on the tibiæ, and on the feet, which are speckled with dark.

The only species which in some respects resembles the present form is *Rana porosissima* Steindachner, from Angola ("Novara Amphibiens," p. 18, Pl. I. figs. 9–13), but it differs in the coloration of the limbs, in the smaller size of the tympanum, smaller vomerine ridges of teeth, in having the apophyses on the lower jaw scarcely enlarged, the tips of the toes not swollen, &c.

Euprepes olivaceus.

The young (body 1 to 1·5 and tail 1·5 to 2 inches) are very differently coloured from the old. The snout and head-shields are olivaceous, the posterior edges of all the shields being blackish; the whole body and limbs are blackish brown, with numerous, rather close, transverse, greenish white or yellow stripes; tail and the entire lower side yellowish white, or quite yellow. In the adolescent and some old ones the pale transverse bands exist as remnants in the shape of transverse series of spots, but most adults become entirely olivaceous, with only the edges of the eyelids bright yellow.

Gymnodactylus pulchellus.

In the descriptions of this species it is usually stated that there are six dark, white-edged bands across the body, but properly speaking the sixth band is situated on the base of the tail. Further, it is stated that a fold of skin exists along the side of the body. This is in reality not the case, at least not in live specimens, but the shield-like scales of the lower side are separated from the granular upper surface by a row of conspicuously enlarged granular scales; this row becomes strongly prominent in spirit specimens, and gives the appearance of a fold.

As regards the position of the femoral pores the species is intermediate between *Cyrtodactylus* and *Gymnodactylus*, the pores lying first in a longitudinal fold and then extending flatly on the femora. This instance shows that *Cyrtodactylus* (as likewise the present species) should be looked upon merely as a section of *Gymnodactylus*.

Draco quinquefasciatus.

A single male specimen measures: head and body 3·5 inch, tail imperfect, apparently about 5 inches. The hind-limb is contained 1·33 times in the distance between it and the fore-limb, the latter being somewhat shorter than the former. There are no enlarged tubercles on the head, but only a number of interspersed, slightly larger white scales at the sides of the neck, and a broad band of closer set ones across the occiput. The scales on the anterior part of the back are obsoletely keeled; on the posterior part they are perfectly smooth. On the wings scales are present along all the ribs, and in numerous longitudinal series on the basal half of the alar skin, while further on their number greatly diminishes, except again at the outer margin.

The specimen has only a very slight indication of a crest on the neck; the gular sack is very long and lanceolate, a dark band running at its posterior base across the lower neck. Chin dark spotted, like the body; tail also spotted at its base, but further on with brown bands. In all other respects the specimen agrees with Gray's characteristic description.

Draco fimbriatus.

Dumeril and Bibron, vol. iv. p. 448. Gray, "Lizards," p. 234.

A specimen from Penang exactly agrees with the one figured by Gray and Hardwicke in "Illust. of Indian Zoology" as *D. abbreviatus* from Singapore. The scales of the back are very small and almost quite smooth, with a series of larger ones on either side at the base of each wing. Günther ("Rept. Brit. India," p. 123) says that no orbital, or rather post-orbital, spine exists. This is a mistake, at least as far as male specimens are concerned. In these there are two very distinct post-orbital spines; they are well shown in Gray and Hardwicke's figure. Dumeril and Bibron's minute description of the head-shields from Javanese specimens also appears exactly to correspond with the structure of Singapore and Penang specimens.

General colour bronze brown; head, not including the nape, a zigzag undulating slightly variegated band across the neck, another across the shoulders, a third between the hind-limbs, and a fourth, though less distinct one, across the middle of the body, pale bluish, a bluish black spot between the eyes; on the body are four irregular marks, each composed of a few blackish lines, and each enclosing along the middle of the back a somewhat elongated diamond-shaped figure.

Limbs with cross dark stripes, and bluish edges to all the front and hind sides. Wings above blackish with radiating bluish lines, below pale with a few scattered black spots. Tail banded with bronze and pale bluish. Chin variegated with dark; gular pouch tinged with blue and red, dusky at the base. Body below uniform yellowish white, with scattered bluish dusky spots, mostly conspicuous along the sides.

Calamaria Stahlknechti, n. sp. Pl. xi. Fig. 2.

Body long, cylindrical, snout somewhat narrowly obtuse; total length 13·5 inches, of which the tail is 1·2 inch; rostral reaching to the upper surface of the head; frontals anteriorly narrower than posteriorly, laterally bent down, and in contact with first and second labials, the nasal being very small; occipital six-sided, with the anterior angle shorter and more obtuse than the posterior one, it is smaller than one occipital; each of the latter has an obtuse angle in front and behind, and both form an inwardly directed angle along the suture on either end; one præ- and one post-ocular; five upper labials, the third and fourth touch the orbit, the fifth is largest, in contact with the post-ocular and occipital; it is followed by a moderately sized shield, which has quite the appearance of a sixth labial, and indeed the gape partially extends below this quasi-sixth labial; above this last extends a long temporal. Mental shield small; five lower labials; the first pair is the

smallest, separated from each other, the fifth the largest. The first pair of chin-shields is largest, each being in contact with three labials, and having a very obtuse angle behind; the shields of the second pair are only about half the size of the first, entirely separated from each other by two scale-like shields following each other, and by two other somewhat larger shields from the first very large ventral. Scales smooth, in thirteen rows; ventrals 163, anal entire, subcaudals twenty-two, the last single occupying the shortly pointed end of the tail.

Uniform iridescent brownish black above, the two outer series of scales on either side mostly white; upper labials spotted with yellow, the fifth labial being almost entirely yellow. Lower side, beginning a short distance from the throat, with two or sometimes three ventral shields alternately yellowish white and black, the black colour encroaching laterally upwards upon the yellowish white lateral bands, and being longitudinally connected along the edges of the ventrals and subcaudals; the latter have besides an interrupted blackish line along the middle, and the pale colour is tinged with vermilion. Possibly the red colour extended over the whole of the light coloration during the life of the snake.

The only specimen examined was sent to me with several other species by my friend Mr. Stahlknecht, of Singapore; he collected the same near Dilli in Sumatra.

In general aspect the species resembles *C. Linnæi*, but differs essentially in several points of its structure. It also does not agree with any of the species more recently described by Bleeker and Edeling, or figured by Ján.

OXYCALAMUS LONGICEPS.

A single specimen of this rare snake was in the Penang collection; it measures seven inches of which the tail is one.

The following may be added to Cantor's and Günther's descriptions:—

The rostral shield is of moderate size, reaching with its angle to the upper surface of the head; anterior frontals small, each about one-third the size of a posterior; the suture separating the two anterior frontals is only two-fifths of the length of the suture between the posterior frontals; vertical six-sided, the sides touching the supraciliaries being parallel to each other; one supraciliary not quite as wide as half the width of the vertical; occipitals nearly double the length of the vertical, reaching down on either side to the postocular; nasal in a *single* shield.

Vent. 137, anal entire, subcaudals 29.

Uniform iridescent black above and below, many of the ventrals and subcaudals with paler posterior edges; a pale yellowish spot on the fifth upper labial and a second one on each side of the throat.

Simotes bicatenatus.

In several specimens, the dark dorsal band is divided by a pale reddish line. A young specimen has only one præocular, and only the upper smaller temporal is in contact with the postoculars.

Simotes cruentatus.

Comp. "Proceed A. S. B." for August, 1872, p. 145.

This species agrees in general aspect and coloration with *S. bicatenatus*, but it has only seventeen rows of scales. One specimen in the collection has a small portion of a labial detached, forming a second (lower) præocular; it has very few dark blotches on the anterior ventrals; only two black spots on the tail, one at the root, the other near the tip.

Simotes catenifer, n. sp. Pl. xi. Fig. 3.

The body is short, stout, moderately compressed, the head large, conspicuously truncate in front.

Rostral shield well reaching to the upper surface of the head; anterior frontals considerably smaller than the posterior ones, both bent down at the sides; superciliaries narrower anteriorly than posteriorly; vertical large, six-sided, with a very obtuse angle in front, somewhat converging sides, and with nearly a right angle behind; one occipital is about the same size as the vertical, each reaches down to the superior postocular and is rather broadly truncate behind. Nostril between an anterior large and a posterior somewhat smaller shield; loreal squarish; two præoculars; the upper is long, while the lower has the appearance of being only a small detached portion of the fourth labial; two postoculars; temporals 1 + 2 + pl., the last is somewhat irregular and scale-like, the first obliquely in contact with both postoculars. Eight, rarely nine, upper labials, the fourth and fifth under the orbit, sometimes a small portion of the fourth is detached, touching the orbit as a separate shield. Mental shield small; nine lower labials, those of the first pair form a suture; anterior pair of chin-shields largest, each in contact with four labials; second pair much smaller, and separated by other two somewhat smaller pairs following each other from the first ventral. Scales smooth, in nineteen rows; ventrals 178 to 205, distinctly angular at the sides; anal entire, moderately enlarged; subcaudals bifid, in 57 pairs.

The general coloration of the upper side is sandy brownish; head with the usual dark brown markings; the first band crosses the eyes and reaches forward to the rostral; the second ascends across the angles of the mouth to the outer medium edge of the occipitals; the third is thick, arrow-shaped, anteriorly prolonged to between the eyes. Body with twelve or thirteen dark cross

bands, each composed of four confluent spots, the two dorsal ones being larger and darker; tail with four or five cross bands. Between each two of these bands the scales, following alternately each other, are partially blackish, forming three undulating cross lines in each interspace. The sides along the ventrals are checkered with blackish brown; lower labials with their hinder edges blackish. Lower side dusky yellowish, tinged with red, which passes into vermilion on the posterior half; every second or third ventral has a quadrangular black spot at each of the outer edges, the interposed edges being white, and the spots are somewhat more distant on the ventrals than on the caudals.

The total length (in two specimens) is 9·5 inch, the tail being 1·75. I have received one specimen from Penang, and Mr. Wood-Mason lately obtained a second one from Jahore, north of Singapore.

This is the fourth species of a small group of *Simotes*, all of which are closely allied to each other, and all belong to the Malay, or Chinese fauna; they agree in their small size, short and stout body, in the form of the head-shields, and in coloration. *S. Cochinchinensis*, Günther, has twenty-one rows of scales round the body. *S. brevicauda*, Steindachner ("Novara Rept.," p. 61, pl. iii. figs. 13, 14) has, like *catenifer*, nineteen rows of scales, but the occipitals and oculars are in the former somewhat differently shaped, the markings on the head are also somewhat different, and there are no lateral spots on the ventrals; in every other respect both species almost perfectly agree, as far as I can judge from the figure and description, and if I had not obtained two perfectly like specimens of *catenifer* from different localities, I would have hardly ventured to separate them as distinct. The fourth species is Ján's *S. ancoralis*, which has the black spots on the edges of the ventrals, but only seventeen rows of scales round the body and only one præocular.

Cyclophis tricolor.

Schlegel, "Phys. Serp." ii. p. 187, pl. vii. figs. 16–18; *idem*, Dum. and Bibr.; Günther; Ján, "Oph.," Livr. 31, pl. vi. fig. 2.

One specimen measures 18·5 inches, of which the tail is 7 inch. Scales smooth, in fifteen rows, vent. 144, anal bifid, subcaudals 129. Greyish, or rather olivaceous, brown above, yellowish white below, a black streak from the nasal through the eye to the side of the neck, rapidly disappearing on the anterior part of the body. Each six-sided scale, above, has the anterior lateral margins pale, producing longitudinal zigzag pale lines; upper labials yellow; along the edges of the ventrals and subcaudals runs an indistinct dusky line, and another interrupted one along the middle of the ventrals, these lines begin to appear a short distance from the neck, which is below and at the sides uniform yellowish.

The fine zigzag pale lines of the upper side are indicated in Ján's figure. Both in structure and coloration the Sumatra specimen agrees with Schlegel's figure and description, except that the head is a little more slender. This specimen had a large spider in the stomach. Schlegel's snake was from Java, and the species has, I think, not yet been recorded from anywhere else.

ABLABES FLAVICEPS *var.*, Günther.

Ann. and Mag. Nat. Hist., vol. xviii. 1866, p. 26, pl. vi. fig. B.

One specimen agrees well with Günther's description and figure of this snake, but it has nine upper labials, the second being replaced by two, so that the fourth, fifth and sixth labials enter the orbit. The hinder chin-shields are almost in immediate contact with the first well-marked ventral. Total length 16·7 inch, of which the tail is 5·5 inch, being somewhat obtuse at the end; scales in seventeen rows, one præ-, and one or two postoculars, 150 ventrals, anal bifid, seventy subcaudals.

Head yellow, somewhat tinged with brown in front, a straight black streak through the eye, and a white one along the upper labials. The general colour of the upper side is brown, powdered with grey; a light blue band begins on each side of the neck, continuing on each side of the back, the colour gradually turning to grey, but both bands remain tolerably distinct to the tip of the tail. On the front part of the body each is marked with squarish black spots along the inner edge, further on the spots become smaller, alternate in position on the two sides, but are somewhat removed from the internal margins towards the middle line. Below, yellowish, all the ventrals (except those on the neck), with narrow blackish hind edges about the middle of the body, almost meeting in the centre, but further on the black becomes more confined to the outer margins, and on the subcaudals it forms a serrated black band on either side, as in *Ablabes melanocephalus*, to which the present species bears a very strong resemblance. Dr. Günther mentions in his specimen only the presence of a black spot on either side of the ventrals.

GONYOSOMA OXYCEPHALUM.

A very large specimen, measuring about five feet, has the scales round the body in twenty-seven series; it is sea-green, the tail strongly tinged with rubescent brown, the sutures of the scales being blackish; the dark streak on the side of the head is very indistinct; upper labials whitish green.

DENDROPHIS CAUDOLINEATUS.

Dr. Günther when noticing my paper on Penang Reptiles in the *Zool. Record* for 1870, says that I described his *D. caudolineolatus*

(from Ceylon) as *D. caudolineatus* of Gray. I should have hardly expected such a brief dismissal of the consideration of all other points connected with the identification of this species. Dr. Günther appears to have noticed merely my statement regarding the thirteen rows of scales round the body, and to this one character he seems to have sacrificed everything else. Now the Penang species, of which I lately also received four beautifully preserved specimens from Sumatra, has only *thirteen rows of scales.* Cantor's description of the snake is admirable, and he gives also thirteen rows of scales. Dumeril and Bibron, when describing their *D. octolineatus*, also speak of only thirteen rows, and Ján (" Ophid." Livr. 31, pl. ii.), gives the same number of scales when figuring the species under Dum. and Bibron's name.

Thus the question to be determined is, whether Gray's type has thirteen or fifteen rows of scales round the body. If fifteen rows are present, we have to see whether we are entitled to regard this number as a normal or abnormal one in that particular specimen—that is, whether other specimens from the same locality have thirteen or fifteen rows of scales ; for, as far as other points of structure and coloration go, the Penang and Sumatra species are absolutely identical with Gray's *caudolineatus.* I have no Bornean specimens for comparison, so I can add nothing more towards the solution of the question.

The Ceylonese *D. caudolineolatus*, as far as I can judge from the description and figure of it, differs in the structure of the præocular in the upper labials, and so very essentially in coloration, that I could not have thought of identifying the Penang *caudolineatus* with it.

Ophites subcinctus.

One specimen measures eighteen inches, of which the tail is 3·25 inch. The general colour of the upper surface is black, slightly duller at the sides, dull olivaceous blackish below; front head above blackish brown; seventeen broad white rings round the body, the first on the neck, and four on the tail; the white of the rings is considerably more distinct on the anterior than on the posterior part of the body. The eight median rows of scales on the back are keeled; eight upper labials, regular on both sides.

Ophites albofuscus.

A remarkably slender snake, measuring 18·75 inches, of which the tail is 5·75 inch. It has seventeen rows of scales, all strongly keeled, the keels on the back being finely crenulated. The general structure exactly agrees with Günther's account of the species. The specimen has 241 ventrals, anal bifid, and 178 subcaudals, the last shield is single, very long and cylindrical.

The general colour is dark brown above, olivaceous white below;

hind head and collar on neck very slightly olivaceous white tinged with yellow; body with twenty-six transverse white cross bands; some are imperfect, the intermediate brown bands of ground colour being first thrice, afterwards only twice, as broad as the white ones. Tail with about twenty-six transverse white bands, several of them succeeding each other, being often confluent along the middle line, and all are about equally broad as the brown bands separating them; towards the tip of the tail the light coloration prevails, and almost entirely suppresses the dark one.

Mr. Stahlknecht obtained only a single specimen near Dilli in Sumatra. Dumeril and Bibron also described a specimen from Sumatra; another one is reported by Dr. Günther as having been brought from Malabar, but as it was bought from a dealer, the locality is not considered reliable.

HIPSIRHINA [FERANIA] ALTERNANS, Reuss.

Eurostus alternans, apud. Dum. and Bib., "Herp. Gen.," vii. p. 957.

Homalopsis decussata, Schlegel.—*Hipsirhina alternans* apud Ján, "Ophid.," Livr. 30, pl. vi. figs. 1 and 2.

One specimen measures: total length 8·25 inches, the tail being one inch. It has two anterior frontals, the first scarcely half as large as the posterior, vertical six-sided, much smaller than one occipital; one loreal, one præocular, two postoculars; seven upper labials, the fourth under the orbit; the two first lower labials are in contact; two pairs of chin-shields, the first forms a suture; the shields of the second pair are much smaller, diverging, and with their upper pointed ends lying between the first chin-shields and the labials. There are twenty-six rows of scales immediately behind the head, twenty-two round the neck, below interrupted by the second ventral, and nineteen round the middle of the body, ventrals 157, anal bifid, subcaudals thirty-four, the first five entire, the last conical.

General colour brown; head, above, anteriorly with a few pale spots; back with narrow pale (yellowish) cross bands; the first passes over the hind-edges of the occipitals and is literally bipartite, the next four are simple and complete, the following after these mostly interrupted along the centre, and after the middle of the body the bands become reduced to indistinct lateral spots. The sides of the body are marked with a series of pale yellow cross-bars, more than one scale broad, and are separated by equally broad bands of the general brown coloration; the lateral pale bands more or less encroach upon the ventrals, but the general colour of these latter is pale brown. Chin and upper labials spotted with yellow.

This coloration slightly differs in minor details from that given by Ján, but it agrees with it in all essential points.

The larger size of the occipitals as compared with the vertical, the smaller number of upper labials, and of the scales round the

middle of the body, and the coloration, readily distinguish the present species from *F. Sieboldi.**

TRIMERESURUS WAGLERI.

Fresh specimens are black above, with numerous spots on top of head, the superciliary edges, both lips, numerous narrow cross bands, and the whole of the lower side bright golden yellow with a greenish reflection during life; the stripe from the nostril to below the eye, continuing above the angle of the mouth, one stripe on each side along the margins of the labials, and all the other light spots on the back, but particularly at the sides, are sea-green, more or less tinged with yellow.

IV.

ON THE LAND-SHELLS OF PENANG ISLAND, WITH DESCRIPTIONS OF THE ANIMALS AND ANATOMICAL NOTES.

By DR. F. STOLICZKA.

(With Four Plates.)

[" Journal of the Asiatic Society of Bengal," vol. xli. pt. ii. pp. 261–271; and vol. xlii. pt. ii. pp. 11–38.]

PART FIRST. CYCLOSTOMACEA.

PENANG, or Prince of Wales Island, although possessing a rich vegetation, growing on old metamorphic soil, a moderately hilly ground, and a moist warm climate—all elements most favourable to Molluscous life—has, up the present time, yielded a comparatively very small number of land shells, and this in spite of the repeated visits which it had received from numerous travellers to the East. I can scarcely find record of more than ten species of both CYCLOSTOMACEA and HELICACEA, which had been reported

* Günther, in *Ann. and Mag. N. H.*, 1866, xviii. p. 28 and in *Zool. Rec.* for 1868, says that Ján figured *F. Sieboldi* as *Hypsirhina Bocourti* (" Iconograph." Livr. 28, pl. v. fig. 2). Ján's *H. Bocourti* has apparently only twenty-three or twenty-five rows of scales round the body, the coloration is somewhat similar to that of *F. alternans*, the occipitals are much longer than the vertical, and there is only one anterior frontal; this, however, is also said to exist in an old specimen of *Sieboldi* from Siam. Still I am not certain that Günther's suggested identity of the two snakes will be confirmed.

Ján does not acknowledge the distinctness of *Ferania* from *Hipsirhina*, and if *F. Sieboldi* has occasionally only one anterior frontal, the principal reason for keeping the two genera as distinct no doubt loses its validity.

to occur on Penang. The paucity of shells seemed to me scarcely credible; but, when visiting the island in 1869, I was not a little astonished to meet for days with nothing else except *Bulimus atricallosus* and *citrinus*, and *Helix similaris* in the low country, cultivated with coco-palms and nutmegs, while in the hills the only common species were a *Rotula* and *Cycloph. Malayanus*, Benson's *Helix Cymatium*, described from Lancavi, being much rarer. After many days wanderings I noticed that all those portions of the ground, which at any, even remote, time showed signs of having been once under cultivation, were hopeless in a malacological point of view, and I turned into the more wild and deep ravines of the North Western part of the island. There, after some days search, particularly in the extensive and very dense forests along the edges of more open tracks, abounding with a rich under-vegetation, I was more successful by adding a good number of land shells to the few already known. Many of these are new to science, and as I had obtained all the species alive, and noted the peculiarities of the structure of the animals, my observations, even as regards the few formerly described species, may be useful in supplementing the information which we already possess.

I shall begin in this first part of the paper with the Cyclostomacea, of which ten species will be reported. My remarks will on this occasion not enter into anatomical details, because I wish to reserve these for a comprehensive study on the anatomy of all the Indian and Burmese species of this group, and the isolated facts would not prove equally interesting as when related in connection with others.

In the second part, which will treat of the Helicacea, I will, however, give all those anatomical details, which are in many instances essential for the correct determination of the different genera.

Group.—CYCLOSTOMACEA.

Fam. Cyclophoridæ. *Genus*, Cyclophorus, Montf.

Cyclophorus Malayanus. Pl. A, figs. 1–5

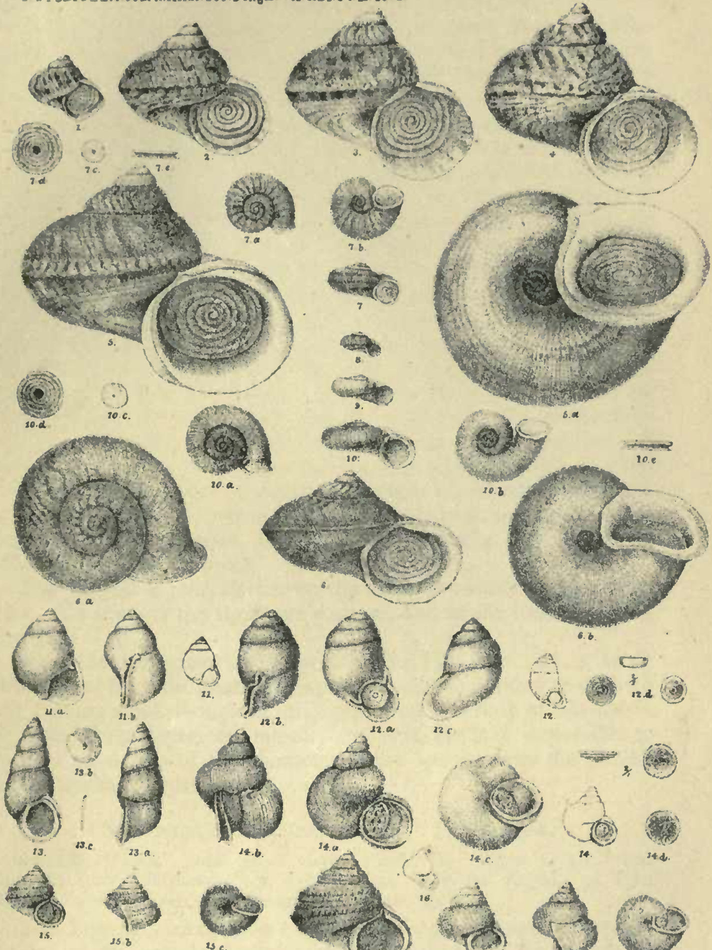
Benson, "A. and M. N. H.," second ser., vol. x. p. 269. Pfeiffer, Monograph "Pneumonopomorum." Suppl. i. p. 42. Reeve, "Conch.," vol. xiii., *Cyclophorus*, pl. i. fig. 2.

This is a tolerably common species on Penang, being generally distributed from near the seashore to the top of Penang hill, about 2500 feet.

I have given a whole series of illustrations in order to show the different stages of growth, although Reeve's figure is a very good representation of an adult specimen.

Ordinarily the shell is smooth, exhibiting only the usual finer and stronger striæ of growth, but the pale brown and thin cuticle,

F. STOLICZKA Journ. Asiat. Soc: Bengal. Vol. XLI. Pt. II. 1872.



1-5 *Cyclophorus Malayanus*, p. 88.
6. " *Borneensis*, p. 89.
7. *Opisthoporus Penangensis*, p. 92.
8-10. " *solutus*, p. 93.
11-12. *Pupina aureola*, p. 94.
13. *Megalomastoma sectilabrum*. p. 94.
14. *Alycæus gibbosulus*, p. 95.
15. *Lagocheilus trochoides*, p. 96.
16. " *striolatus*, p. 97.

when well preserved, is spirally striated, the striation being more conspicuous in younger shells than in more adult ones.

Young specimens of only two or three volutions have very conspicuous transversely oblique cuticular striæ, and in this stage the shell with its angular last whorl perfectly resembles Pfeiffer's *Cyclostoma* (*Leptopoma*) *Birmanum*,* which is no doubt either a young of the present species or of *C. Siamensis*. Nearly all young *Cyclophori* have these transverse filiform striæ of the cuticle.

When larger the shell scarcely differs from that of *C. Cantori*, Benson, of which figures are given by Pfeiffer in Chemnitz' "Conch.-kab.," and also by Reeve. I have not obtained in Penang any such small specimens with fully developed lips as are represented in those figures, but I have observed that the usual difference of the male being often slightly smaller than the female also exists in the present species; and an illustration of a nearly full-grown male, given in fig. 4, comes very close to that of Reeve. Judging from the difference observed in the size of the sexes of other species, as is, for instance, very often the case in *C. Pearsoni*, I am inclined to the opinion that the specimens described as *C. Cantori* are males of *C. Malayanus*, the latter being females. If this were the case, the former name would have priority over the latter; but even if the explanation of sexes would not in this case hold good, I believe that the form described as *Cantori* can scarcely be looked upon as anything else than a smaller race of *Malayanus*, and *vice versâ*.

The animal is grey, darker on the head, brownish on the tentacles, pale towards the tip of the rostrum, and at the basal edges of the foot.

What Hanley figures in "Conch. Indica," pl. xlviii. fig. 4, as *C. Malayanus* from the Shan States, has, I believe, nothing to do with the Penang shell, though it may represent a variety of *Siamensis*, or a peculiarly depressed one of *flavilabris*, but it is impossible to form a good idea of the character of the species from the insufficient illustration given.

CYCLOPHORUS BORNEENSIS, var. Pl. A, fig. 6.

Metcalfe, "Proc. Zool. Soc." 1851; Pfeiffer in "Chem. Conch." xiv. p. 362,; Mon. "Pneumon.," p. 63; Martens, "Ost.-As. Exped.," p. 136; Reeve, "Conch.," vol. xiii., *Cyclophorus*, pl. xii. fig. 50.

The Penang variety of this species is flatter, somewhat sharper keeled at the periphery, and with a slightly more expanded lip than exists in any Bornean specimens I saw, but the general type of the shell is unmistakable. It is a rare species on Penang hill. I found during many days' search only two adults,† and one young.

* Chemnitz' "Conchylienkabinet," vol. ix. p. 363; and Mon. "Pneum.," Suppl. ii. p. 85.

† The figured specimen is the more depressed one.

The former are covered with a rather thick dark brown cuticle, marked with very fine transversely oblique, and also with spiral striæ, by which a kind of very minute granulation is produced. There is a row of larger brown spots along the suture, while the rest of the whorls is densely variegated with reddish brown, most conspicuous after a partial removal of the cuticle, and the keel is slightly funiculate. This coloration is almost exactly like that of *C. porphyriticus*, as figured by Pfeiffer in Chemnitz' "Conchylien-kabinet."

One of the most important characters of *Borneensis* is the straightness and slight concavity of the inner portion of the peristome along the umbilical margin, followed by the basal portion being somewhat produced. This character also occurs in *C. aquila* and *perdix*, with the last of which Benson's *C. porphyriticus* has been considered as identical. E. v. Martens already observes (*loc. cit.* p. 135) that it is impossible to give a well-defined diagnosis of *C. aquila*, as the species is very variable and readily passes into *Borneensis* and *perdix*. I have not a sufficient series of authentic specimens from different localities, but the few from Penang, Singapore, and Borneo entirely support the view expressed by E. von Martens, and make it most probable that the different names noticed only refer to the principal varieties of one and the same species. It is unquestionable that even in true Bornean specimens the upper convexity of the whorls is sometimes greater, sometimes less, the keel on the last whorl sharp, or obtuse, or again almost obsolete, and in consequence of this the sharp-edged last whorl passes into an obtusely angular, or even slightly rounded one, and that with these variations the height of the entire shell must naturally vary.

I possess Singapore specimens of *Borneensis* which exactly agree with *C. porphyriticus*, as figured by Pfeiffer in Chemnitz, and as this figure is authentic, being taken from the type in Benson's collection, I would not hesitate to add *porphyriticus* as a synonym of *Borneensis*. Sowerby's original figures of *perdix* (at least fig. 127 in "Thes.," vol. i.), and of *aquila* scarcely differ, and both very well agree with the form of *Borneensis* as usually obtained at Singapore, having the whorls above rather inflated, and the periphery very obtusely angular. The same applies to Chemnitz's figure of *aquila*, while that of *perdix*, after Tenasserim specimens, very closely corresponds with one of my Penang specimens of *Borneensis*, except in having a greenish cuticle. Reeve's figure of *aquila* is probably taken from a specimen obtained inland north of Singapore; those specimens are particularly fine and probably most aberrant from the type shell, which Reeve figured as *Borneensis*, while his figure of *perdix* has the whorls as round as *Siamensis*, and though it may belong to the same species as represented by Sowerby's figure 128 in "Thes.," vol. i., I do not think

that it can at all be referred to the *Borneensis* group, because it appears to want the peculiar straightness of the inner portion of the peristome.

The solution of this question of identity depends now upon a comparison of the type-specimens of Sowerby's *C. perdix* and *aquila* with a good series of typical *Borneensis*, as represented in Borneo, near Singapore, Malacca and Penang; for it will also determine the nomenclature of the latter species.

The animal of the Penang variety of *Borneensis* is uniform pale brown with a slight pinkish tinge, and covered with numerous flat greyish warts; the foot is rather narrow and very long posteriorly, the lateral basal portion below the pedal row is warty, not sulcated; head slightly darker than the body, tentacles blackish near the tip; eyes on small bulgings, surrounded by a pale ring; mantle greyish, thick near the margin. There is scarcely a noticeable difference in the size of the sexes.

The only other species of *Cyclophorus* which I have to mention, and which has been described from Penang, is *C. Pfeifferi* of Reeve. It belongs to the section of *C. tuba*, with a very much expanded peristome, without any markedly straight inner, or produced basal portion. E. v. Martens (*loc. cit.* p. 134) states that it is probably not constantly different from *C. tuba*, but, setting aside the more inflated whorls of the latter species, I believe *Pfeifferi* also differs from the last by a much more rapid increase of the volutions. In this point, as well as in the flattened and angular shape of the whorls, it, however, quite agrees with *expansus*, and a large specimen of this last from Tenasserim scarcely at all differs from Reeve's illustration; I would, therefore, be inclined to regard *Pfeifferi* as identical with *expansus*.

Genus, OPISTHOPORUS, Bens.

There is no apparent distinction between the shells of *Opisthoporus* and those of *Spiraculum*. A cursory examination of the animals of a few species also showed that no essential distinction exists in the general anatomical structure, and but a very slight one in the dentition.

The only difference, which, as far as known, is a constant one, consists in the structure of the operculum. In the former genus this is discoid, horny on the inner side, calcareous on the outer, and composed of spiral laminæ entirely covering a tube. In *Spiraculum* the upper spiral layer is also generally calcareous, and more or less elevated, but the spiral canal is always open, not forming a closed tube. The former structure of the operculum is peculiar to *Cyclotus*, the latter to *Pterocyclus* and some species of *Cyclophorus*.

OPISTHOPORUS PENANGENSIS, n. sp. Pl. A, fig. 7.

O. testa sub-discoidea, apice paulum exserta, latiuscule umbilicata, corneo solidula; anfractibus 4·5 *ad* 5, *teretibus, sutura profunda junctis, epidermide brunnea vel nigrescente, transversim confertissime striata, in ultimo anfractu ad peripheriam superam et inferam breviter ciliata, indutis, sub epidermidem albescentibus atque strigis transversis, brunneis vel fuscis, paulo undulatis, aut plus minusve acute angulatis, notatis; apice sub-mammillato, nigrescente vel pallido; umbilico modico, fere dimidium latitudinis anfractus penultimi exponente; ultimo anfractu ad aperturam valde descendente, sed haud dissoluto, ad suturam tubulo brevi tenuique, sæpissime retrorsum curvato, rare fere verticali, rarissimeque antice versus directo, in speciminibus adultis circa* 1·5 *ad* 2 *m.m. a margine aperturali distante, instructo; apertura circulari, ampla, obliqua, peristomate in junioribus simplici, in adultis breviter bilabiato, margine labii interni paululum incrassato, sæpe rubescente tincio, haud distincter discreto, externo expansiusculo; ambobus supra paulum productis atque prope suturam modice insinuatis. Operculum discoideum, interne vix, externe distincte, concavum et album, multispiratum, medio corneo-testaceum, laminis duabus separatis ad peripheriam acutissimis. Diam. maj.* 11·5; *diam. min.* 9·5; *altit. testæ* 6·6; *diam. apert. int.* 4, *externæ cum perist.* 4·7 *m.m.*

This species is evidently closely allied to E. v. Martens' *O. Sumatranus*,* which is of nearly exactly the same size, but its whorls are decidedly thinner, and on the upper side more flattened, the upper apertural margins are considerably more produced, the plain of the aperture being, therefore, more oblique to the axis, while the sutural tube appears to be more distant from the margin. The direction of the tube was observed in four specimens of *O. Sumatranus* to be nearly vertical, while in about eighty specimens of the Penang form it is directed backwards, being sometimes, when well preserved, perfectly parallel to the suture; in a few specimens, however, it is nearly vertical, and in two or three even slightly directed forward. The character is, therefore, evidently variable. Young shells, sometimes measuring up to 9 m.m. in the longer diameter, still have no sutural tube developed, while others (mostly males) reach the adult stage already at even a somewhat smaller size.

Hab.—I found the species common under dead leaves on the ground along the base of the Penang hill, mostly in dense jungle.

Animal stout, blackish, sometimes mottle with grey and tinged with pink, nearly smooth, with few little warts, paler at the sides and at the end of the foot, which is, when fully extended, about twice the longer diameter of the shell; it is pointed at the end;

* "Preuss. Exped. nach Ost-Asien.," Zool. Theil, vol. ii. p. 112.

operculigerous lobe slightly more thickened in front than behind; tentacles paler at base, blackish on terminal half, slightly thickened towards the end, but pointed terminally; eyes small, on laterally slightly prominent bulgings, united to the base of the tentacles; rostrum wrinkled, cleft in front, and with pale lips; penis of male long, thin and black, without any appendage.

OPISTHOPORUS SOLUTUS, n. sp. Pl. A, figs. 8–10.

O. testa planorbulari, apice paulo exserta, late umbilicata, corneo solidula; anfractibus 4·5, *fere teretibus, supra et infra paululum depressiusculis, sutura profunda ac simplici junctis, in spec. junioribus ad peripheriam sub-angulatis; ultimo ad terminationem dissoluto, paulo expansiusculo modiceque deflexo, tubulo suturali antice directo, circiter* 2 *m.m. a margine aperturali distante, instructo; anfractibus superioribus epidermide fusco-olivacea, transversim rugata, in ultimo fere simpliciter confertimque striolata, indutis, omnibus sub epidermidem albidis, sparse scrobiculatis, transverse minutissime striatis; apice albido; umbilico magno, anfractuum omnium maximam partem exhibente; apertura lata, circulari, peristomate duplici, interno tenui, paulum projiciente, externo undique modice dilatato, in facie antica concaviusculo et concentrice striato, in regione supra-suturali sensim producto; ambobus ad suturam anguste emarginatis. Operculum normale, in utroque latere vix concavum, multispiratum, medio corneo-solidum. Diam. maj.* 15·5; *diam. min.* 11·5; *alt. testæ* 7·3; *diam. apert. int.* 4·3, *ext. cum perist.* 5·5 *m.m.*

Young shells of this species (comp. fig. 8) are regularly planorbular, with a simple, continuous, thin lip of the aperture, and the olivaceous epidermis is rather coarsely rugose, forming darker transverse bands; under the lens also a very fine spiral striation is to be observed. In the middle stage (fig. 9), when the shells possess 3·5 to 4 whorls, and a diameter of 10 to 13 m.m., the margin of the aperture has a short, open, sutural canal, exactly as in the South Indian *Pteroc* (*Myxostoma*) *tristis*, Blf., and which canal is the origin of the sutural tube, becoming fully developed in the more adult shell, as soon as the end of the last whorl begins to detach itself from the previous one.

Hab. Penang. I have only obtained about fifteen specimens of this species, also under dead leaves on the ground in dense jungle, together with the last, which is, however, the more common one.

The animal is entirely of a rather pale grey colour, nearly smooth, slightly mottled with darker; tentacles blackish, with a few darker spots about and between their bases, entirely black at tip; rostrum cleft, wrinkled, with a pale lip; lateral pedal row rather indistinct, as also in the preceding species.

Fam. PUPINIDÆ.

Raphaulus Loraini, which was described by Pfeiffer from Penang out of Cuming's collection, was not met with by me.

PUPINA AUREOLA, n. sp. Pl. A, figs. 11–12.

P. testa oblique ovata, apice breviter sub-acuta, glaberrima, politissima, moderate solida, intense vel luteole succinea, prope peristoma aurea ; anfractibus sex, convexiusculis, in adultis sutura indistincta junctis, primis duobus sub-mammillatis, ultimo spira breviore, valde descendente ; apertura parva, circulari, labio incrassato, sulco satis profundo ab anf. penultimo separato ; incisionibus angustis sed profundis ; labro antice sensim producto, extus paulum incrassato, aureo tincto. Operculum orbiculare, altum, corneum, ad utrumque latus paulo concavum, ex lamella spiraliter torta tenuissima compositum, nucleo depresse circulari, paullulum incrassato instructum. Long. testæ 8·8 *lat. ad medium* 5, *diam. apert. ext.* 2·3 *m.m.*

Hab. Penang ; haud frequens.

This species is closely allied to *P. aurea*, Hinds, differing from it by a smaller aperture, a more laterally produced, shorter and slightly contracted last whorl. The solidity of the shell, and the intensity of coloration naturally varies with age ; young specimens are thin, and nearly transparent, pale straw-coloured, the suture is distinctly impressed, and the outer lip very slightly produced. In adolescent specimens the upper labial rib is rather distant from the posterior angle of the mouth (see fig. 11), as in the Tenasserim *P. arula*, but the Penang shell is shorter and stouter. Old specimens are entirely covered with a polished glaze, and are intensely or yellowish rufous brown, with a yellow inner and outer peristome.

The animal is of the usual Cyclophorid type, uniform, intense or greyish black, paler along the sides of the foot, which is of about the same length as that of the shell.

MEGALOMASTOMA SECTILABRUM, Gould. Pl. A, fig. 13.

Penang specimens agree with those from Tavoy in having a smaller aperture, and a slightly slenderer spire, with somewhat convex sides, while in *M. anostoma* from Borneo, the spire is more regularly conical, and the aperture larger.

Animal blackish grey with a slight reddish tinge; the edges of the foot, including the posterior end, and the tentacles are vermilion, tips of rostrum pale grey. The length of the foot equals about three-fourths of that of the shell when the animal moves about ; the entire body is rather distinctly warty, but no well-defined pedal row exist ; the rostrum is adpressed to the foot, strongly wrinkled and cleft at the end ; posterior end of foot obtusely pointed, eyes small, the bulgings united at their bases to the tentacles. The mantle is pale, entire, closely attached to the peristome of the shell, and not protruding beyond it.

Operculum horny, circular, composed of several spiral layers

arranged round a slightly thickened or mammillated centre so that the width of each lamina equals the radius of the whole operculum. This structure is somewhat peculiar; it agrees with that of the South Indian *Cataulus recurvatus*, but not with that of the other *Catauli* or *Megalostomata* examined; in all these the operculum is distinctly multispiral.

The species occurs at elevations from 400 to about 2400 feet on the Penang hill, but it is evidently a very scarce shell; I found only one live specimen at the top of the hill.

Fam. DIPLOMMATINIDÆ. *Sub-fam.* ALYCÆINÆ.

ALYCÆUS GIBBOSULUS, n. sp. Pl. A, fig. 14.

A testa gibboso turrita, anguste umbilicata, violaceo rubente, ultimo anfractu pallidiore, lutescente, apice albescente; anfractibus quinque, valde convexis, sutura profunda et simplici junctis; primo lævigato, tribus sequentibus transversim densissime striato-costellatis atque spiraliter striatis, ultimo gibbose inflato, paulo distinctius costellato, prope aperturam breviter sed valde constricto, sub-lævigato, vix deflexo, post constrictionem tubulo tenui, circiter duo ad tres m.m. longo, nonnunquam fere immerso, instructo; apertura circulari, modice lata, in adolescentibus margine simplici undique expansiusculo circumdata, in adultis bilabiata, labio interno extus tubuliforme producto, crassiusculo, externo dilatato atque tenui. Operculum solidum, latere interno corneo, convexiusculo, medio submammillato, multispirato, impressione musculari transverse ovata atque excentrica instructo, externo calcareo, concaviusculo, in superficie irregulariter rugoso. Diam. maj. 9·2 *diam. min.* 7, *alt. testæ* 9·6; *diam. apert. int.* 3·8, *externæ* 4·8 *m.m.*

In general character this interesting new species closely resembles the type of the genus, *Al. gibbus*, Fér., but the latter conspicuously differs by having the constricted portion of the last whorl much more produced and very much deflected, the height of the shell being also considerably less than the larger diameter of the shell. Eydoux, who collected the species at Touranne in Cochin-China, says in his original description* that the operculum is membranaceous and not multispiral.

The species is not uncommon along the base of the hills in thick jungle, under and on large blocks of rocks, generally between half-decomposed vegetable matter.

The animal is dusky grey, foot pale; tentacles long, pale at the base, further on dark, especially at the tips, which are slightly thickened; eyes small, placed laterally at the bases of the tentacles, but the bulgings are not distinct; rostrum long, cleft at the end, reddish at the base on account of the fleshy colour of the manducatory apparatus.

* Guérin-Méneville's *Magasin de Zoologie* for 1838.

Fam. LAGOCHEILIDÆ.

Genus, LAGOCHEILUS, Theobald.

Comp. Blanford in *Ann. and Mag. N. H.*, third ser. 1864, vol. xiii. p. 452.

Shell conoid sub-turbinate and perforated, thin, covered with a horny cuticle; aperture round with a narrow incision in the upper or posterior angle; operculum thin, horny, multispiral. Animal of the usual Cyclophorid type, but with a glandular slit at the upper posterior end of the foot.

The shell of *Lagocheilus*, when the cuticle is removed, merely differs from *Leptopoma* by the slight incision in the posterior angle of the aperture. When Mr. Theobald suggested the above name, it could scarcely have been anticipated that such a comparatively insignificant character would be accompanied by a most important structural distinction in the anatomy of the animal. Mr. Blanford already, many years past, noticed that the animal of the Barmese *Lagocheilus leporinus* * has the peculiarity of possessing a groove down the middle of the upper caudal portion of the foot. Since then I have observed the animals of *L. tomotrema*, of two new species from Penang, and of two other species from the Nicobars, and I find that all the animals possess a long glandular slit at the upper end of the foot, and that the incision in the apertural margin is the result of the presence of this pedal slit. This instance is an excellent illustration of the occasional intimate structure and the relation of the animal to its shell.

Lagocheilus, together with *Dermatocera*, has evidently among the CYCLOSTOMACEA the same systematic position as the ZONITIDÆ have among the HELICACEA. The external character of the animal of *Lagocheilus* is accompanied by some peculiarites in the dentition and in the internal organs, with which I hope to deal at some future occasion, in connection with a general account of the anatomy of the Indian CYCLOSTOMACEA.

The species which are at present known to belong to the genus are *L. tomotrema*, Bens. (Sikkim, Assam, and Cachar), *leporinus*, Blf. (Barma), *trochoides* and *striolatus* from Penang, *Wüllersdorfi*, Pfr. and Zel., and another as yet undescribed species also from the Nicobars; *scissimargo*, Bens., from Tenasserim. These localities indicate the geographical extent of the genus. Reeve, in his Monograph of *Cyclophorus*, when speaking of *L. scissimargo*, says that there is more or less an indication of a notch in the aperture of *C. triliratus*, Pfr. (= *quadrifilosus*, Bens.), while Pfeiffer, in his second Supplement to the "Pneumonopoma" (p. 29), refers the latter species to *Cyclotus*.

LAGOCHEILUS TROCHOIDES, n. sp. Pl. A, fig. 15.

L. testa turrito conica, sub-anguste umbilicata; anfractibus sex

* *Journal A. S. B.*" for 1865, pl. ii. p. 82.

sutura profunda simplici junctis, primis duobus convexis, ceteris supra medium angulatis, ultimo bi-angulato; omnibus cuticula opaco-fusca indutis, transversim striolatis, spiraliter striatis, striis filiformibus: duabus in anfractu penultimo supra angulum subdistantibus, infra angulum 4–5 *approximatis; in anfractu ultimo angulis duobus ad intervalla breviter ciliatis; basi in adultis prope peripheriam et ad umbilicum, in junioribus omnino, confertim striata; testa sub cuticulam albida, ad apicem rubescente; apertura rotundata, modice obliqua, in angulo superiore vel postico distincte incisa bilabiata; labio interno breviore, violaceo tincto, externo fere plane expansiusculo, in facie concentrice striolato, ad marginem exteriorem atrato. Operculum multispiratum, tenue, corneum. Diam. maj.* 10, *diam. min.* 8, *alt. testæ* 9·6, *diam. apert. int.* 4·2, *externæ* 5 *m.m.*

This is the largest species as yet known of the genus, the more regularly conical form, angular whorls, numerous spiral striæ, absence of brown spots on the shell, &c., readily separate it from *L. scissimargo.* The fine transverse striolation of the cuticle is very easily worn off, but the spiral striation is always very distinct and well marked even after the removal of the cuticle. Young shells have a striking resemblance to those of *Cremnoconchus Syhadrensis;* they are comparatively more largely umbilicated than adult ones, and their cuticle is more or less distinctly olive, while in the latter it is dark brown in fresh specimens, often becoming reddish brown in dried ones.

Hab.—Penang. I found the species on large stones between decaying vegetable matter at an elevation of from 200 to about 1000 feet; it is scarce.

The animal is pale grey, the body itself being slightly darker than the foot; the rostrum is long, deeply cleft in front, reddish at the base; tentacles long and thin, dark grey, blackish towards the tips; eyes on their outer base on indistinct bulgings; a dark pedal row, moderately swollen, extends from the lower base of the rostrum to behind the operculum, from which a deep, narrow glandular slit proceeds along the middle to the end of the foot.

LAGOCHEILUS STRIOLATUS, n. sp. Pl. A, fig. 16.

L. testa turrito conoidea, anguste umbilicata; anfractibus 5·5 *convexis, sutura simplici junctis, ultimo ad peripheriam inferiorem vixangulato; apice lævigato, olivaceo; anf. ceteris cuticula fusca vel brunnea indutis, transversim oblique subdistanter, et spiraliter densissime, striolatis; basi sub-lævigata vel sub-obsolete spiraliter striatula; apertura ampla, sub-circulari, peristomate postice ad angulum profunde inciso, infra ad latus basale conspicuiter producto, bilabiato, labio interno in junioribus violaceo, in adultis ad marginem albido, externo undique fere æqualiter planeque dilatato, corneo. Operculum tenue, corneum, multispiratum. Diam. maj.* 6, *diam. min.* 5, *alt. testæ* 6·6; *diam. apert. int.* 2·6, *ext.* 3·2 *m.m.*

This smaller form resembles *L. tomotrema* and *leporinus*, but it is distinguished from both by a slightly larger spiral angle, rounded (not angulated) whorls, and by the very dense, filiform, spiral striation.

Hab.—Penang. Under dead leaves on the ground along the base of the hills, together with the last species; rare.

Animal leaden grey, with moderately elongated, darker, cylindrical tentacles; eyes on minute bulgings, joined on the inner side to the base of the tentacles; upper posterior part of the foot with a narrow glandular slit, extending from the operculigerous lobe to the end; lateral pedal row very thin.

PART SECOND. HELICACEA.

In this group of pulmoniferous land-shells I shall notice twenty-three species, belonging to the *Zonitidæ*, *Helicidæ*, *Bulimidæ*, *Clausiliidæ*, *Philomycidæ*, *Pupidæ*, *Streptaxidæ*, *Veronicellidæ*, and *Vaginulidæ*. The majority of the species are new, except a few previously described from the neighbouring country, and on one or two of such commonly distributed species, as are *Stenogyra gracilis* or *Ennea bicolor*.

Nearly all the species had been collected with the animals living, and I have spared no pains in order to make the detailed anatomical account as complete as it appears desirable for a correct generic determination.

I scarcely need to mention that, on the whole, the fauna is characteristically Malayan, the same fauna which extends from the Philippine Islands through Burma and Arakan into the warm valleys of Sikkim. In the plains of Bengal it mixes with the Indian fauna proper.

I cannot help repeating the urgent request to my conchological friends in India, that they may favour me with live specimens of the species of shells occurring in their neighbourhood. In the *Helicacea* especially, the anatomical characters are indispensable for a correct generic determination, and without this it will not be possible to obtain a natural arrangement of our terrestrial Mollusca.

FAM. ZONITIDÆ.

RHYSOTA* CYMATIUM (*Benson*). Pl. i. figs. 1–3, and pl. ii. figs. 13–15.

Helix Cymatium, Benson, apud Pfeiffer, "Novit. Conch." i. p. 58, pl. xvii. figs. 1–2.

Penang specimens, which slightly differ in the height of the spire (see figs. 1–3, pl. i.), agree in almost every point of structure with the type shell, described by Pfeiffer, from Lancavi, a small

* Albers, "Heliceen," edit. E. v. Martens, p. 54.

island situated a few miles north of Penang. The increase of the volutions is in both exactly the same, the upper side of the whorls is marked with fine oblique rugosities, the lower is spirally striated; in fresh specimens the former is silky brown, the lower olivaceous brown, the inside of the aperture is, in full grown specimens, covered with a kind of a nacreous callose layer. The only noticeable difference consists in the narrowness of the umbilicus, its width being, in all the Penang specimens which I obtained, about one-twelfth of the diameter of the shell, while in Benson's type it is only one-seventh of the same diameter.

The species is found all over Penang hill, from elevations of about 300 to 2500 feet, and both on the ground as well as on trees, but chiefly on the latter; it is, however, not common, and adult shells are indeed extreme rarities.

The closely allied *Rh. densa* (Adams),* only differs by a slightly smaller number of whorls, the last being much wider. *Rh. Chevalieri* (Souleyet), differs in the same character, though it has the umbilicus of exactly the same size as the Penang variety of *cymatium*.

The animal is stout and rather short, its total length being less than twice the diameter of the shell; the posterior part of the body is the shorter one, and above rather sharply ridged; it ends with a large gland and a projecting horn above it. The whole body is uniform more or less dark brown, laterally strongly warty and obliquely grooved; the pedal row is very distinctly margined on both sides with an impressed line, and the margin of the foot below it is broad, smooth, marked with alternately brown and pale oblique stripes, so as to give the appearance of a variegated fringe. The eye peduncles and tentacles are of usual proportionate length, dark brown or even blackish, the latter with pale tips. On the whole, the general colour of the specimens varies a great deal; the young are mostly pale brown with an olivaceous tinge, while in old ones the neck, including the head and pedicles, become almost black.

The mantle is somewhat paler than the body, its edge moderately thickened. There are two small linguiform shell-lobes present, a right one, just below the inner or posterior angle of the aperture of the shell, thus playing on the inner lip, and producing its moderately distinct nacreous and callose structure. The other lobe lies below the outer periphery of the shell on the basal side; it projects from the outer end of a rather elongated very narrow fringe, which is separated from the edge of the mantle itself. The right neck-lobe is entire, thick, rounded, somewhat freely projecting at the lower or umbilical end. The left neck lobe is divided into two portions, the upper elongately rounded, the lower much narrower, with the upper end somewhat pointedly extended. The edge of the mantle which secretes the umbilical margin of the

* E. A. Martens, "Ost-Asiat. Expedit.," p. 230, pl. x. fig. 1.

peristome is internally considerably thickened (comp. pl. ii. fig. 13).

I have not been able to see satisfactorily the exact structure of the genital system, but, as far as it could be examined, it appears almost entirely to agree with that of *Rhysota semiglobosa*, figured by Semper. There certainly are no appendages present—neither on the penis, nor on the seminal duct or uterus.

The jaw is smooth, semilunar, with a round projection in the middle of the concave edge ; it is about 2·5 m.m. broad.

The radula is comparatively of very great length. In a middle-sized specimen it measured seven m.m. in length and three m.m. in breadth, although one of the ends was not quite perfect. I counted 106 transverse rows and about 141 teeth in each row. The centre tooth has a comparatively short point without any lateral denticles, and is somewhat smaller than the adjoining laterals. The first of these has a long, laterally bent, rather blunt projection ; the following very gradually decrease in size, and the middle cusp becomes gradually more pointed and curved, while the basal plate decreases. With about the fiftieth tooth the end begins to become bicuspid, and on about the hundreth tooth on either side, the two cusps are sharpest and best developed.

Semper ("Reisen im Archipel, der Philipp.," vol. iii. p. 68), says that *Rhysota* does not possess any developed shell-lobes of the mantle. In the present species their existence is undeniable, and still all the other characters of the animal and shell point towards the greatest relation of *R. cymatium* to other typical species of the genus, which scarcely would have any meaning, if it were restricted in the sense given to it by Semper. I very much doubt that all the species with polished lower surface of the shell, referred by Semper to *Rhysota*, have no shell-lobes. How then do they produce the smoothness of the shell? I generally found shell-lobes essential for that purpose. But supposing some of the species really had no shell-lobes, this would be no sufficient reason for excluding any other species which possess them from *Rhysota;* for in *Xesta* we have a similar mixture of forms with and without shell-lobes.

Thus the only anatomical difference, which remains to be considered as distinguishing *Rhysota* from *Xesta*, is the simple form of the genital organs in the former. How far this character is really reliable for generic distinctions, is a point by no means easily settled, as I had already occasion to notice when speaking of the anatomy of the two species of *Sitala* (*Conulema*, olim) ("Journ. A. S. B.," vol. xl. pt. ii., 1871, p. 236, &c.), *S. attegia* and *S. infula*.

When we compare the characters relating to the presence or absence, or form of the mantle lobes, we meet with a perfect similarity between *Rhysota* and *Rotula*. The distinction between the two merely rests in the presence of an amatorial gland in the

latter genus, while the shells only differ in the upper side of *Rhysota* being irregularly corrugated, and in *Rotula* reticulately striated, or transversely costulated.

In speaking of the shell of *Rhysota*, Albers gives the peculiarly rugose upper surface as one of the most important characters of the genus.

ROTULA* BIJUGA, n. sp. Pl. i. figs. 4–7 and pl. ii. figs. 16–18.

R. depresse conoidea et suborbiculata, vel late conica, angustissime umbilicata, tenui, cornea, pallide succinea; anfractibus 5·5 ad 6·5, suturâ simplici, suprâ rare filiforme marginata, junctis, lente accrescentibus, in superficie superiore convexiusculis, costulis, transversis obliquis, confertis, striis spiralibus confertissimis ac plus minusve distinctis intersectis, crispatulis seu subgranulosis, ornatis; ultimo ad peripheriam acute carinato, ad basin modice inflato, nitido, sublævigato, striis incrementi radiantibus atque alteris spiralibus sub-obsoletis notato, medio concaviusculo; apertura angulatim semilunari, paulum obliqua, labio tenuissimo vix distinguendo, labro ad marginem tenui, neque expanso, neque incrassato, ad insertionem umbilicalem brevissime reflexo instructa.

Dimensiones varietatum frequentium:—

	Diam. major.	D. minor.	Alt. testæ.	Alt. aperturæ.	Lat. aperturæ.
a.	14·5	13·5	11·0	6·0	7·6 m.m.
b.	16·2	15·0	10·9	6·6	8·2 ,,
c.	17·4	15·6	12·0	7·2	9·2 ,,
d.	17·4	16·0	10·9	7·0	9·0 ,,

Diam. maj. speciminis maximi 18·8 m.m.

It will be seen from the above measurements, which are taken from the four figured specimens, that the height of the shell is very variable, but the increase of the whorls is very nearly quite constant. The upper convexity of the whorls also slightly varies; the sides of the spire are generally nearly straight, more rarely conspicuously convex; occasionally the peripherical keel is somewhat projecting above the suture. The ornamentation is characteristically that of *Rotula*, reticulately sculptured above, nearly smooth below. The transverse ribs on the upper surface are traversed by fine spiral lines, which generally only produce a slight undulation in the direction of the ribs, sometimes, however, a fine granulation is formed. As regards form, the present species

* Comp. "Journ. A. S. B.," 1871, vol. xl. pt. ii. p. 231. The name *Rotula* has also been applied in the ACTINOZOA; but if our zoological classification should make such rapid progress as it has done lately, it will, I think, in no long time be almost impossible to find new names for the generic groups, and we shall be forced to modify the existing rules, at least so far that the same name may become reapplicable in at least the five or six principal divisions of the animal kingdom. A further relaxation of the rule would scarcely prove beneficial, and would hardly be necessary.

very closely resembles the Burmese *R. anceps* (Gould), and also the South Indian *R. Shiplayi;* the first has, however, the upper costulation very fine and no spiral striæ, while the latter has both much stronger developed, producing a granular surface, and the shell is also more solid. The third very closely allied species is *R. indica*, differing principally by a greater width of the last whorl, and also by a stronger sculpture.

The animal of the Penang species, when fully extended, equals in length about twice the longer diameter of the shell; back roundly flattened above, foot posteriorly obtusely ridged, terminating with a large gland which is superseded by a small horn; pedal row very distinct, and the edge of foot below obliquely striated. The general colour of the body is pale or livid grey, with a general reddish tinge when full grown. A pale yellow (in young) or more or less distinctly cinnabar red (in adults) stripe extends along the centre of the back and the superior ridge of the foot; the former is bounded on each side by a broad black stripe, originating at the base of each peduncle and continuing to the mantle, and below this stripe there is again a yellowish or red line. The posterior red band is only edged with black. The sides of the foot, both anteriorly and posteriorly, are more or less distinctly variegated with impure black and tinged with red; front of head between the two pedicles and tentacles with a black spot; pedicles and tentacles generally greyish, the latter with a a reddish tinge, and with pale, rather large, globular tips, the former with a black ring at the base where the longitudinal black bands begin.

The mantle is moderately thickened. The right shell lobe is entirely obsolete, or only indicated by a very slight extension of the edge a short distance below the upper angle of the aperture of the shell. Sole of foot divided by a longitudinal groove. The right neck lobe is large, and extends as a moderately broad fringe to near the retractor muscle, where it terminates with a free end. The left neck lobe is smaller, with a linguiform free outer end. The left outer edge of the mantle is externally also entire, like the right one, but about the middle of the basal portion it has internally a distinct lobe, about two m.m. in length, which, in its situation strictly speaking, lies between the shell and the neck lobe; but as it becomes reflected with its edge over the shell, it has to be regarded as the representant of the left shell lobe. The lower portion of the left neck lobe is only a thickened swelling, extending, as a narrow inner rim of the edge of the mantle, to near the umbilicus. Both the right and left neck lobe have a large black spot, in continuation of the latter black bands of the back.

The general anatomy does not differ in any essential point from that of *R. anceps*, as briefly noticed by me in "Journ. A. S. B.," vol. xl. pt. ii., 1871, p. 233, pl. xvii. fig. 1.

The jaw is semilunar, perfectly smooth, with obtusely rounded

corners, and a slight rounded projection in the centre of the concave edge; it is about 1·5 m.m. broad.

The length of the radula is about 4·5, and its breadth above 1·5 m.m.; it is composed of about 105 transverse, nearly straight, rows of teeth, there being about 121 teeth in each row. The form of the teeth again very closely resembles that of *Rot. anceps* (*loc. cit.*). All the points extend beyond the upper edge of the basal plate; the central is somewhat widened below the terminal point, contracted in the middle, but it has no distinct denticles at the sides. The laterals gradually become more and more turned and curved with a small inner and scarcely a trace of an outer denticle; up to the twentieth they very gradually diminish in size, then a very slight break follows, the twenty-first being somewhat sensibly smaller, and first distinctly bicuspid at the tip, while at the same time the size of the basal plate has much diminished, until in the last teeth it almost entirely becomes obsolete; the two terminal cusps on the other hand become gradually more and more equal.

The genital organs have a distinct amatorial gland, possessing, near its origin, a large globose appendage, internally composed of an elliptical largely cellular mass, in which the cells are concentrically arranged with their longer diameter perpendicular to the walls of the ellipse. The posterior part of the gland is filled with a finely granular substance, probably calcareous particles. The vas deferens has only one slight enlargement about the middle of its length; it consisted in a simple thickening of the walls, but I could not trace any calcareous particles in it. Towards the end, where the penis is lodged, the tube is widest and somewhat curved, but there are no other appendages or calcareous sacs, accompanied with a flagellum, present, such as have been observed in many other species of *Rotula*.

SITALA* CARINIFERA, n. sp. Pl. i. fig. 8.

Testa globose conoidea, cornea, apice obtusula, angustissime perforata, anfractibus quinque, gradatim accrescentibus, convexe angulatis, sutura simplici junctis, transversim minutissime striolatis, superis infra medium carinis filiformibus duobus ornatis, ultimo ad peripheriam tricarinato, basi planate convexiusculo, lævigato; apertura semilunari, verticali, non descendente, labro extus tenuissimo, in regione columellari paululum reflexiusculo.

Diam. maj. 2·2, minor 2·, alt. testæ 2· m.m.

Hab.—Penang hill, in foliis *Coffeæ arabicæ*, specimen unicum.

The animal of this species is exactly like that of *S. infula*, figured in pl. xviii. in "J. A. S. B.," vol. xl. pl. ii., for 1871; it has a

* H. Adams proposed this name for *Helix infula*, Bens., as type ("P. Z. S." for 1865, p. 408). I had unfortunately overlooked this reference when I proposed for Benson's *attegia* (and *infula* and a few others) the name *Conulema*, which must now be regarded as identical with *sitala* ("J. A. S. B.," xl. pt. ii. p. 236).

generally pale brownish grey colour; but having obtained a single specimen, I did not like to sacrifice the shell in order to notice the internal structure; for, when examining these little species, one is by no means sure that he will obtain from a single specimen an insight into the whole anatomy.

The present species is closely allied to the Nilgheri *Helix tricarinata*, Blf., which is also a *Sitala*, and differs by a more depressed and broadly conical shape, and by having a much wider umbilicus.

MACROCHLAMYS* STEPHOIDES, n. sp. Pl. i. fig. 9, and pl. ii. figs. 19–20.

M. orbiculata, spira depresse convexiuscula, basi medio concaviuscula, angustissime perforata, tenui, succineo cornea, unicolore, circa umbilicum albescente; anfractibus sex, lentissime accrescentibus, sutura lineari junctis, infra suturam angustissime adpressis, nitidis, fere politis, striis incrementi transversis minutissimis, nonnunquam fere omnino obsoletis, notatis, supra convexiusculis; ultimo ad peripheriam fere uniforme convexo; apertura subsemilunari, vix obliqua, labio per-tenui, labro simplici, ad basin paulum sinuose producto, ad insertionem umbilicalem anguste atque breviter reflexo. Diam. maj. 11·6, d. min. 10·7, alt. 7; alt. apert. cum perist. 4·8, ejusdem lat. 5·6 m.m.

The nearest ally of this species, as regards general character and size, is the Andamanese *Macroch. stephus*,† Benson, differing from the present species by a somewhat more depressed form and by having the sides of the spire nearly straight or slightly concave, but not convex. *Macroch. hyalina*,‡ Martens, is also very closely allied, it is a larger shell, and with a more rapid increase of the volutions, the difference between the smaller and larger diameters being 2·5 m.m. In Burma and Sikkim several other allied forms occur, such as *M. hypoleuca*, *patane*, *petasus*, &c., but they are all smaller and more depressed shells.

The species is rare. I found a single live specimen and half a dozen of old shells at the base of Penang hill, about 300 feet.

The animal is long and very slender, blackish grey above and on the pedicles, paler at the sides of the foot, which has a long and thin horn above the tail gland. Both shell and neck lobes are well developed, the right ones larger than the respective left ones. The two shell lobes are linguiform, and the right one, when fully expanded, covers almost half of the upper surface of

* Comp. "Journ. A. S. B.," vol. xl. pt. ii. 1871, p. 246.

† The figure of this species in "Conch. Ind.," pl. lxii., is taken from a young or imperfect specimen, in which the peculiarly depressed form is not so well discernible as in an adult shell. Fig. 6 on the same plate is incorrect, because it does not show the sinuosely produced median basal portion of the peristome.

‡ "Preuss. Exped. nach Ost-Asien," ii., p. 241, pl. xii. fig. 5.

the shell. The lower portion of the left neck lobe is merely represented by a slightly thickened rim, extending from the place of insertion of the left shell lobe to near the umbilicus.

The jaw is one mill. broad, with a central rounded tooth in the concave edge, and with the corners somewhat bent outwardly; a form which is also met with in several other species of *Macrochlamys*.

The radula has not been seen perfect, but it does not appear to have been more than four mill. long, and there appear to have been at least 101 teeth in each transverse row, all with very sharp points; the central with a distinct denticle on either side, and the last laterals with two small unequal cusps; all have the basal plate obtusely narrowed outwardly.

The genital organs are very similar to those of *M. indicus*, Benson, but much more slender; the amatorial gland is very thin (in a young specimen); there is a small cæcal appendage on the vas deferens, and a flagellum at the base of the penis, just before a swelling filled with calcareous particles.

MICROCYSTIS* PALMICOLA, n. sp. Pl. i. fig. 10.

M. testa late conica, tenui, cornea, angustissime umbilicata; anfractibus quinque, gradatim accrescentibus, convexiusculis, sutura simplici junctis, supra splendore albide sericino, transversim oblique, minutissime atque confertissime, striolatis, ultimo ad peripheriam acute angulato; basi convexiuscula, olivaceo nitita; apertura subsemilunari, extus angulata, obliqua; labro tenui, simplici, ad basin recedente, ad umbilicum reflexo; labio tenuissimo, vix distinguendo. Speciminis maximi diam. maj. 2·8, d. minor 2·6, alt. 2·2, diam. apert. 1·7, ejusd. alt. 0·95 m.m.

Hab.—Penang, sub corticem *Coccos nuciferæ*, haud frequens.

The shell is distinguished from allied species by its comparatively sharply angular last whorl, slightly inflated base, and by the peculiar silky and very finely striated upper surface.

The animal when fully extended equals in length about four diameters of the shell; it is rather dark brownish grey, darkest on the tentacles and on the rostrum; posterior gland superseded by a small horn.

HELICARION† PERMOLLE, n. sp. Pl. i. fig. 11, and pl. ii. figs. 21–23.

H. testa depresse inflateque conoidea, tenuissima, fere membranacea, translucente, pallide lutescente, vix perforata, spira ultimo anfractu multo breviore; anfractibus 4·5, rapide accrescentibus, ad suturam simplicem adpressis, nitidis, convexiusculis,

* *Microcystis*, Beck. Comp. Semper in "Reis. Arch. Philipp.," pt. ii. vol. iii. 1870, p. 43; and Stoliczka in "J. A. S. B.," vol. xl. pt. ii. p. 251.

† Semper, "Reisen Archip. der Philippinen," vol. iii. p. 20.

ultimo inflato, ad peripheriam rotundato, transversim lente arcuateque striatulo, ad basin striis spiralibus sub-obsoletis notato; apertura lunari, valde obliqua, labio albescente, minutissime puncticulato, labro tenuissimo, simplici, ad basin valde recedente, ad marginem interiorem umbilici breviter reflexiusculo. Diam. maj. 8·4, d. min. 7·4, alt. 6·3; alt. apert. cum perist. 4, ejusd. lat. 4·3 m.m.

The rather strongly elevated spire, and the membranaceous and transparent structure of the shell, separate this species from the numerous allied forms of the Philippines. The species is rare; I only obtained about half a dozen specimens on low bushes or between old vegetable matter on the ground, about 500 feet above the sea, on Penang hill.

The animal is slender and very long; when fresh the extended foot is three times the longer diameter of the shell, which is then entirely covered by the mantle; but in captivity the shell lobes shrink very rapidly, being reduced to narrow linguiform appendages. Middle of back and of the hind-foot whitish or very pale brownish, with a slight pinkish tinge; a broad blackish band runs from each pedicle along the sides of the whole back, and also on the sides of the posterior part of the foot, as far as the terminal gland, which is superseded by a very distinct pointed horn; the dark colour extends down to the pedal row, while a large black spot about the middle of the foot on each side reaches down to the sole; pedicles long, grey; tentacles short and almost white; mantle blackish with small whitish dots. All the four mantle lobes are well developed, the left shell and neck lobes are proportionately somewhat larger than the corresponding right ones, and each of the former has a deep but narrow incision in its lower portion.

The jaw is about one mill. broad, quadrant-shaped, smooth, without any projection in the centre of the concave edge, like in most other species of the genus.

The radula is moderately broad and nearly 2·5 m.m. long; there are 95 transverse rows, and about 121 teeth in each row, all remarkably small, and from the tenth tooth they somewhat rapidly decrease in size towards the edges. The centre tooth has two distinct denticles on either side, and a third much smaller one nearer to the base; the principal cusp is pointed. On the subsequent teeth the inner denticles disappear first, and gradually altogether, then the lower outer, while the upper outer remains, until at last it equals the principal cusp, so that the outermost teeth become almost regularly, though shortly, bicuspid.

The general anatomy does not offer any peculiarity requiring special notice. The nervous and digestive apparatus agrees with that of other ZONITIDÆ, except perhaps that the liver is enormously largely developed. The female portion of the genital system has a long sub-pedunculate receptaculum seminis, branching off at its

origin. The vas deferens is very short, passing into a rather widened tube, again somewhat contracted near the base of the penis, which is attached by a special strong muscle. The end of the penis widens very rapidly for a short distance before it joins the hermaphrodite opening. I have not observed, in two specimens examined, any cæcal or calciferous appendages.

Genus, TROCHOMORPHA, *Albers.*

"Heliceen," Edit. E. v. Martens, p. 60; and "Preussische Exped. nach Ost. Asien," vol. ii. Landschnecken, 1875, p. 245; *Nigritella* and *Videna*, ibidem; *Sivella*, Blanf.

The type of this genus is *Helix trochiformis*, Fèr., which is characterized by a moderately solid sub-discoid or depressedly conical shell, the whorls being flattened above, the last carinate at the periphery, the aperture rhombiform or narrowly semilunar with simple sharp edges, but the columellar lips occasionally internally somewhat thickened and slightly reflexed.

I do not know whether the animal of this typical species had been examined, but I have observed those of about a dozen different species, which evidently belong to the same type, and I find that all of them possess a very fine glandular slit at the upper end of the foot, the pedal row being in all also distinct; they have, therefore, to be referred to the ZONITIDÆ, as already noticed in my paper on the Moulmain shells in "Jour. A. S. B.," vol. xl. pt. ii. 1871, p. 225.

Judging from a somewhat more intimate examination of the animals of a few species, the following characters have to be added to those derived from the peculiar shape of the shell:—

Animal moderately slender, with the posterior part of the foot shorter than the anterior, the former terminating above with a small glandular slit; pedal row distinct; mantle with elongated narrow neck lobes, but with the shell lobes entirely wanting, left neck lobe sometimes divided or insinuated in the middle; jaw smooth; genital organs without amatorial gland, or any other appendages; seminal receptacle and seminal duct very long.

The *Trochomorphæ* live on the ground generally in decaying vegetable matter, under or on old wood. Three species have been found in Penang.

Albers, while noticing several typical species, such as *T. planorbis*, Less., under his genus *Discus*, referred to *Trochomorpha*, a most varied mixture of shells; for instance, *anceps*, Gould, *serrula*, Bens., &c., which belong to *Rotula*; *Parrackpoorensis*, Pfr., is a *Kaliella*; *cacuminifera* and *infula*, Bens., are *Sitalæ* (= *Conulema*, olim); *H. capitium*, Bens., does not belong to the present family, but to the next, the true *Helicidæ*, &c.

E. v. Martens (*loc. cit.* pp. 246 and 247) adopted two groups in the genus *Trochomorpha*; the one, for which he proposes the name

Nigritella, includes the obtusely conoid and more solid shells, sometimes with a somewhat obtuse periphery; these are true *Trochomorphæ*, of the type of *H. trochiformis*, or of *Troch. Ternatana*, Guillou; the name *Nigritella* is, therefore, entirely superfluous. The second group is classed by Martens as *Videna*, Adams; it includes the more planorboid and sharply keeled species of the type of *H. planorbis*, Less. For this same group (type *H. castra*, Benson), W. T. Blanford proposed the subgeneric name *Sivella*. Judging from the similarity of the shells of these two groups, and from what we know of the animal of *T. Ternatana*, observed by Martens, I very much doubt that any necessity exists for subdividing the genus *Trochomorpha*.

TROCOMORPHA CASTRA (*Benson*). Pl. i. figs. 14–6, and pl. ii. figs. 7–9.

Helix castra, Benson, "Ann. and Mag. Nat. Hist.," 1852, vol. x. p. 349.; Reeve, "Conch. Icon.," *Helix*, No. 1160.

The shell is subject to a very considerable amount of variation as regards the elevation of the spire. Young specimens are sometimes almost planorbular, and in some adults the total height, of the shell is scarcely more than one-third of the larger diameter, while in others it somewhat exceeds one-half of the same dimension. The width of the umbilicus varies from 0·2 to 0·3 of the diameter of the shell. The base is always distinctly spirally striated, but on the upper side the oblique transverse striæ of growth prevail. The usual colour is pale horny, sometimes brown with a pale band below the suture.

The species is very rare on Penang hill, but it is common in Pegu, Arakan, Assam, Sikkim, and within the last few years it became abundant in the botanic garden near Calcutta, having been most likely introduced from Darjeeling. One of the largest Sikkim specimens in my collection measures: larger diam. 13, smaller diam. 12, height of shell 7, same of apert. 3, width of same 5·4 m.m.

The animal changes from dark leaden to blackish grey, being always paler at the sides of the foot, generally tinged with brownish below the pedal row; tentacles and pedicles mostly somewhat darker than the body; neck distinctly warty; sole dark grey, entire, without any distinct furrows; tail gland represented by a fine slit about one mill. long. The total length of the foot generally equals one and a half diameters of the shell, the caudal portion being always shorter than the anterior one. The mantle is blackish and in its extent above the large pulmonary cavity variegated with pale spots.

The jaw is smooth, very thin, almost semicircular, with broad oblique ends and a small, in younger specimens sometimes almost

obsolete, projection in the centre of the concave edge; its width is about half a mill.

The radula is narrow, about two mill. long, or slightly longer, composed of about eighty-five transverse straight rows, there being about 101 teeth in each of them. All have very sharp, long and pointed cusps, the central with a small denticle on either side near the tip; on the outer ones, as they turn laterally and gradually decrease in size, the inner denticle disappears, while the outer increases, until on the last fifteen or twenty teeth, preceding the three or four terminal ones, it equals the principal cusp. The last few teeth are short, broad, and their outer cusp becomes almost entirely obsolete, the teeth presenting merely an oblique sharp edge.

The female portion of the genital organs has a globular swelling near its origin at the hermaphrodite opening, and the receptaculum seminis branches off above this gland, it is fully one inch long, somewhat thickened in the middle. The penis is attached by a short muscle, about 4 m.m. long and moderately thickened.

TROCHOMORPHA CANTORIANA (*Benson*). Pl. i., fig. 13.

Helix Cantoriana, Benson, "Ann. and Mag. Nat. Hist.," 1861, vii. p. 85.

Five specimens which I found on Penang hill (at about 2,000 feet elevation) exactly correspond with Benson's description, which was taken from a solitary specimen obtained by Dr. Cantor on the small island of Sung-Sung near Penang. The illustration given on plate i. will dispense with a repetition of the description quoted above. The apex is smooth, slightly swollen, and there are scarcely more than five whorls in specimens of 10 m.m.

The animal is blackish grey, with a very narrow, pale dorsal stripe, quite similar to that of *T. castra*, but by some accident no specimen was preserved in spirit, so I cannot give any further details of its structure; it is, however, certainly a *Trochomorpha*. The specimens were found under a log of old wood.

TROCHOMORPHA TIMORENSIS (*Martens*). Pl. i. fig. 17, and pl ii. figs. 10–12.

E. v. Martens, in "Preuss. Ost-Asiat. Exped.," 1867, ii., p. 248.

Penang specimens, of which I obtained sixteen, entirely agree in form and structure with the shell described by E. von Martens, with the single exception that the last whorl is not descending near the aperture, but there is an inclination to it, as its terminal portion in adult specimens is slightly more bent downwards than the preceding part (comp. figs. 17*a* and 17*b*). This character is, however, certainly a variable one; it does also occasionally occur in adult specimens of *T. castra* and *T. planorbis*. The differences noticed by E. v. Martens regarding the greater number of whorls, and the larger umbilicus, with less rapidly descending sides, in

Timorensis, when compared with *planorbis*, are well marked in Penang examples.

The species is found sparingly on or under old wood all over Penang hill; *T. planorbis* was not met with there, but it is a very abundant shell at the Nicobars.

The animal is uniform blackish, mantle more intense black; pedal row distinct, and the edge of the foot below it nearly quite smooth; neck and sides covered with small warts; tail gland represented by a very fine slit, scarcely more than half a mill. long.

The jaw and radula are quite similar to those of *T. castra*. The former is about three-quarters of a mill. broad, with somewhat curved out ends and a broadly rounded central projection in the concave edge. The teeth are very slender, and the lateral denticles are very close to the tip on the centre tooth. The outer denticle descends a little lower down on the laterals, but it always appears to remain smaller than on the corresponding teeth of *T. castra*; the outermost laterals were not observed, they must be very thin.

The genital organs are distinguished by a very great length of the seminal receptacle and of the seminal duct; the former is one and a half to nearly two inches long; it is somewhat widened near its origin, but further on almost throughout equally thin.

Fam. VITRINIDÆ.

Vitrina nucleata, n. sp. Pl. i. fig. 12, and pl. ii. figs. 4–6.

Vit. testa depresse ovata, tumidula, tenui, pallide cornea, translucente; anfractibus 3·75, nucleo 1·5 anf. composito, late conico, inflato, lævigato, duobus anf. sequentibus ad suturam adpressis, subcanaliculatis, rapide accrescentibus, nitidis, transversim striis incrementi minutissimis notatis; apertura ampla, per-obliqua, labio undique tenuissimo, ad basin valde recedente, margine supero convexiusculo. Diam. maj. 9, diam. minor 7, alt. test. 5·3, alt. aperturæ 4·8, ejusdem latitudo 6·1 m.m.

A characteristically distinct species, by having the nucleus composed of one and a half whorls, conically tumid, while the next whorl is at its beginning only very narrowly exposed, or almost entirely covered. The outer lip is very thin, almost membranaceous, and simple throughout.

V. nucleata is one of the rarest Penang shells. I found three live specimens on the Penang hill in dense forest on old wood, about 1000 feet above the sea, and two more old shells at the base of the hill.

The animal is entirely black, only slightly paler at the front sides of the foot; it is very long and slender, its total length being about four times that of the longer diameter of the shell; the

anterior part is the much shorter one, the posterior tapers into a point, and the whole is warty and grooved. The mantle, however, is nearly smooth. In quite fresh specimens the two shell-lobes entirely cover the shell, but generally the left lobe covers a little more than one-fourth of the last whorl extending from the margin of the mouth, while the right lobe also covers one-fourth of it, beginning at the angle of the mouth, but at the same time also envelopes the whole spire. The neck lobes are also well developed, rounded, with simple edges, the left is much larger and longer than the right one. The sole of foot is pale brown, divided by two grooves in nearly three equal parts, of which the median is smooth, and the lateral transversely sulcated. Pedal row well marked by a thin groove above and along the entire base of foot.

The jaw is semilunar, radiately finely striated, with a blunt projection in the centre of the concave edge; the outer or convex portion is smooth; it measures about 0·75 m.m. in breadth.

The radula is about two mill. long and half a mill. broad; there are 110 transverse, almost quite straight rows, but only sixty-one teeth in each of them. All have very sharply pointed cusps, the central has two small lateral denticles on either side; on the outer ones these denticles almost entirely disappear.

The genital organs are distinguished by a great length of the uterus, at the end of which lies a large albuminous (*ag.*) and hermaphrodite gland (*hg*). The seminal receptacle (*rs.*) is a long, pedunculated, spacious bag, which includes a peculiarly twisted, horny organ, provided on the concave side with short crispate appendage. It is the same problematic organ which I described in *Sesara infrendens*, Gld., and *Macrochlamys* [*Durgella*] *honesta*, Gld. (Comp. "J. A. S. B.," xl. pt. ii. p. 242 and 250, pl. xvi. figs. 5 and 6, and pl. xvii. fig. 13). Whether this structure represents the amatorial organ, and whether that which we call a seminal receptacle really possesses the function which we attribute to it, appears to be as yet an open question. In the present species I found the terminal end of the so-called seminal receptacle filled with a milky substance, which under a high power exhibited a quite irregular flaky appearance.

In other respects the present species does not offer any anatomical peculiarities. The œsophagus is comparatively thin, long, cylindrical. The kidney, situated near the end of the rectum, is very large, of a broadly triangular shape; the liver enormously developed.

Some years ago, the *Vitrinæ* were classed as a sub-family of the *Helicidæ;* more recently they have been treated by various authors with the *Zonitidæ*, in the Oxygnathe group of HELICACEA. I think the older classification is preferable, as entered by Binney and Bland in their "Land and Fresh-water Shells of N. America." But I would prefer to give them, together with *Helicolimax*,

Hyalina and their allies, a position intermediate between the two families. They combine, indeed, several of the characters of both. Although they do not possess a terminal mucous gland on the end of the foot (as all *Zonitidæ* do), they have a more or less distinct pedal row, and the sole appears to be often divided by longitudinal grooves. The jaw is entirely or partially finely transversely striated, not quite smooth, as usually in *Zonitidæ*, and not ribbed, as in true *Helicidæ*. However, the teeth, particularly the outermost laterals, have more the pointed character of the former than of the next family.

Fam. HELICIDÆ.

Trachia* Penangensis, n. sp. Pl. iii. figs. 1 and 18–20.

T. suborbiculata, alta, spira breviter elevata, obtusa, modice sed profunde umbilicata, tenui, fere cornea, cuticula luteo-fusca dense et breviter pilosa induta, unicolore; anfractibus 4·5, convexis, sutura profunde subcanaliculata junctis, ultimo ad peripheriam uniforme convexo, ad aperturam paulo descendente, ad marginem umbilici obtuse angulato; apertura semilunari, labio tenui, labro expanso atque reflexo, ad insertionem umbilicalem paululum dilatato, ad basin indistincte subangulato, pallide violaceo tincto. Diam. maj. 16, diam. min. 14·5, lat. aperturæ cum perist. 8·8, ejusd. alt. 8·2 m.m.

As regards the thin, almost horny, fulvous, thickly and finely setose structure of the shell, this species is probably most closely allied to *T. erinacea*, Pfr., but it differs from it, as well as from two other very similar forms, *T. quieta*, Reeve, and *T. eustoma*, Pfr., by its conspicuously more elevated spire. Other species of similar type, like *T. breviseta*, Pfr., from Siam, *T. Helferi*, Bens., from the Andamans, and four or five others described by Pfeiffer and E. v. Martens, have nearly all a more depressed form and mostly sub-angular last whorl, although their spire is somewhat elevated.

The animal is dark chocolate brown, with a very narrow pale dorsal and caudal stripe, the body is laterally somewhat more blackish in front, and tinged brownish behind; the posterior end of the foot is the shorter one, as in *Trochomorpha*, although not to the same extent.

The jaw is quadrant-shaped, with about six strong ribs,† and one or two less distinct ones on either side; it is 1·3 m.m. broad.

The radula is about 2·5 m.m. long., and 1 m.m. broad; there are ninety-five transverse rows, and ninety-one teeth in each of them, decreasing in size the more they approach the edges. The centre tooth is slightly smaller than the first laterals. All have a large basal plate, which is on the centre tooth slightly emarginate in the middle of the upper edge; this emargination increases in depth on

* Compare, Stoliczka in "Journ. A. S. B.," vol. xl. pt. ii. 1871, p. 223.

† Evidently very much like that of *Campylæa*.

the laterals, the inner branch remaining smaller, until on the last ones the upper edge becomes represented by two obtuse branches. The hook is on all teeth comparatively small, broad, with a moderately sharp point. On about the tenth tooth a small denticle appears to show on the outer edge near the tip, becoming more distinct on the following teeth. After the eighteenth lateral, the teeth become somewhat more rapidly shorter, but increase in width until the last are wider than long, or high, and on these the basal plate has almost entirely become obsolete.

The genital organs are more than an inch long. The female porion has a long seminal receptacle, strongly thickened and muscular for some distance from its origin, then passing into a long thin tube, and terminating with a moderately enlarged bubble, attached by very thin muscular fibres to the albuminous gland, which is situated at the end of the uterus. The vas deferens takes its origin near the upper end of the uterus; it is attached by numerous thin threads at the hermaphrodite opening, and after a short distance enlarges into a muscular tube. At the beginning of this enlargement is a short pointed flagellum (*f*), and at the other end, where the penis begins, is a retractor muscle. The penis itself has near its base a cæcal appendage; its terminal portion, before it joins the hermaphrodite opening, is very thin.

A comparison of the genital organs with those of *Trachia delibrata*, represented in "J. A. S. B.," vol. xl. pt. ii. 1871, pl. xvi. fig. 1, will show that the only essential difference consists in the presence of the small cæcal appendage on the penis in *T. Penangensis*. The jaw has fewer and less strong ribs than that of the former species, but the teeth themselves are extremely similar.

Taking all these anatomical characters, together with those of the shell, as noticed in my paper cited as above, I think we can consider *Trachia* as a fairly established genus of the HELICIDÆ.

HELIX [FRUTICICOLA] SIMILARIS, Fér. Pl. ii. figs. 1–3.

Comp. E. v. Martens in "Preuss. Exped. nach Ost-Asien.," vol. ii. pp. 43 and 270, &c.; Stoliczka in "J. A. S. B.," vol. xl. pt. ii. 1871, p. 224.

On Penang this species is mostly found in the coco-palm plantations up to a height of about 200 feet, never in the interior of large forests, and at great elevation. The shells are of the usual small size (larger diam. between 12 and 13 m.m.), with or without a brown peripherical band. The striæ of growth are generally fine, but in some specimens they accumulate to strong ribs, which give the shell a very peculiar costate appearance.

I also obtained the species from Malacca, near Singapore,

Hongkong, Chusan, Macao, Canton, &c., northwards it extends through Tenasserim into Burma, where it is associated with a great number of closely allied species, some of which may prove to be mere varieties of it. I may mention *H. bolus*, *H. scalpturrita*, *H. Zoroaster*, &c.

In Bengal itself the species is not known, but in Central India it is represented by *H. propinqua*, and on the Andamans by *H. hemiopta*. Judging from the great number of closely allied species in the Indo-Malayan region, there is certainly the greatest probability that the original habitat of *H. similaris* falls within the Indo-Malayan Archipelago, and that it has been introduced into Mauritius, China and South America.

The animal is rather slender, all over strongly warty, brownish fleshy white, or pale brown, the pedal row is very slightly indicated by a fine groove; the pedicles and tentacles are greyish white, mantle dull milky white, with a slight vermilion tinge. When the animal is quite fresh the total length of the foot is equal to from two and a half to three longer diameters of the shell.

The jaw is semilunar, about 1 m.m. broad, with three strong central ribs, followed by a somewhat broader one on either side, while the next is only indicated by a faint dark line.

The radula is, when compared with the size of the animal, large, about 2·3 m.m. long, and somewhat more than one m.m. broad; it is composed of about ninety transverse rows, with sixty-seven teeth in each of them. The central is much smaller than the adjoining laterals, with a long arched cusp. The laterals somewhat rapidly decrease in size after the fourteenth; on the outermost the basal plate gradually disappears, while the breadth of the teeth exceeds their length.

The genital organs are more complicated than in *Trachia*. The female portion has at its origin a rather short, thick muscular cæcal appendage, which most probably represents the amatorial gland; it is widened near its origin and at its rounded end. The seminal receptacle is a round bag, attached to a long thin peduncle of about the same length as the uterus. The seminal duct is moderately long, but the penis comparatively thick and attached by a strong muscle.

FAM. BULIMIDÆ.

BULIMUS.—Sub.-gen. *Amphidromus*.

The only two species which I found among the coco-palms were *Bulimus atricallosus* (Gould), and *B. interruptus*, var. *citrinus;* the uniform coloured greenish-yellow variety. The former is the more common species.

Besides these two, the ubiquitous *Stenogyra gracilis* is by no means rare at the roots of palm trees.

Fam. CLAUSILIIDÆ.

Clausilia (Phædusa) Penangensis, n. sp. Pl. iii. figs. 4–6 and 15–17.

C. testa fusiformi, plus minusve atenuata, medio ad anfractum penultimum latissima, non rimata, solidula, castanea, apice submammillata, albescente, anfractibus 9·5 ad 10·5, convexis, sutura simplici junctis, transversim confertissime striolatis, penultimo sensim attenuato; apertura ovata, intus castanea, peristomate modice expanso, undique libero, albescente, plica supera crassa, ad marginem aperturæ continua, columellari immersa, tenui, valde oblique intrante; plicis palatalibus six, prima longissimima, unam mill. a margine suturali distante, ceteris multo brevioribus, subæqualibus, modice curvatis atque fere æquidistantibus.

Var. brevis, exquisite fusiformis, vide fig. 6 et *6a*; long. 24, lat. 6·2, apert. cum perist. 6 longa, 4·5 m.m. lata.

Var. elongate fusiformis, vide fig. 5; long. 26·3, lat. 6·2, apert. 6·9 longa, 4·7 m.m. lata; in hoc specimine apertura exceptionaliter longa est, in speciminibus alteris, forma similibus, longitudo aperturæ 6·2 ad 6·4 observanda.

Var. exilis, attenuate fusiformis, vide fig. 4 et *4a*; long. 27, lat. 6, long. apert. 6·3, lat. 4·6 m.m.

Hab.—Penang hill, frequens.

This is an extremely variable species as regards the shorter or longer fusiform shape of the shell, and also as regards the size of the aperture, but both these variations are very commonly observed in other species of the genus, and particularly in the allied Malayan species *Cl. Gouldiana*, Pfr., *insignis* (Gould),* and *Sumatrana* (Martens).† All three have a similarly variable shape, and finely striated, moderately convex, whorls, but in the two former the aperture is much shorter, of a squarish shape, and in the last it is conspicuously longer; E. v. Martens gives its length at 8 m.m. in a specimen, the total length of which is from 23·5 to 31·5 m.m. In this last species, which also comes nearest to the Penang shell, the whorls appear to be slightly less convex, and there are only five palatal plates present.

The animal is uniform grey, covered with small pale brown warts, darker on the back, paler on the pedicles, which have very small, black eyes; tentacles very short.

The general anatomical structure agrees with that which I published of *Cl. Philippiana* (comp. "J. A. S. B.," vol. xl. pt. ii. 1871, p. 174, pl. vi. fig. 8).

The genital organs are distinguished by a very great length of both the uterus and the penis, both of which are much twisted. The only appendage is that of the seminal receptacle, which is

* "J. A. S. B.," xli. pt. ii. pp. 203, 204, 208, pl. ix.
† "Ost-Asiat. Exped.," 1867, p. 379, pl. xxii. fig. 17.

comparatively small and narrow, situated at the end of a long peduncle.

The jaw is very short, about 0·5 m.m. broad, apparently smooth; only very faint radiating and concentric lines are to be observed in certain lights.

The radula is about 2 m.m. long and 0·5 m.m. broad; it consists of about 125 rows, with sixty-one teeth in each row. All are provided with a strongly curved cusp; after about the fifteenth tooth, they rather rapidly decrease in length. Towards the end of each row they become multi-serrated, while the basal plate almost entirely disappears. The last teeth are very short, but broad, almost linear, and entire.

CLAUSILIA [PHÆDUSA] FILICOSTATA, n. sp. Pl. iii. figs. 7–8.

Cl. testa fusiforme turrita, apice sensim attenuata, subrimata, tenui, pallide cornea; anfractibus 10 ad 11, lente convexiusculis, sutura simplici junctis, ad suturam filiforme marginatis atque infra marginem paulum contractis, transversim oblique dense costellatis, antepenultimo vix latiore quam penultimo, ultimo versus aperturam paululum contracto; apertura ovate subtrigona, postice (aut supra), subangulata, peristomate expanso, undique libero, plica supera tenui, haud usque ad marginem peristomatis interni extensa, intus in fauce rapide evanescente, columellari approximata, fortiori, valde obliqua; plicis palatalibus circiter decem, supera longissima, a margine distante, duabus vel tribus sequentibus multo brevioribus, cæteris brevissimis, omnibus inter se irregulariter dispositis. Long. 21·2, lat. 4·4; long. apert. cum perist. paulo imperfecto 4·8, lat. 3·6 m.m.; specim. secundi apert. cum perist. perfecto 5·3 longa et 4 m.m. lata.

Hab.—Penang hill, cum precedente, sed rarissima.

This species is very closely allied to *Cl. Javana*, Pfr., but the latter has the whorls, particularly the middle ones, somewhat higher, the transverse costulation is a little finer, and more crowded, the palatal plaits are fewer, two according to Küster, three to four according to E. v. Martens; it also appears to have the two labial plaits stronger. I do not know any other species with which the Penang shell can be compared. It appears to be extremely rare; out of three specimens found only one has the aperture with the margins perfectly well developed.

FAM. PHILOMYCIDÆ.

Benney and Bland, "Land and Fresh-water Shells N. America," pt. i. 1869, p. 294.

Genus, PHILOMYCUS.

1820. Rafinesque. Comp. "Complete Writings," by Binney and Tyron, 1864, p. 64.
1821. Férussac, "Tabl. Syst. des Limaces," p. 14.

1823. *Meghimation*, Hasselt, "Algem. Konst.," &c., p. 232; *idem.*, Fér., 1824.
1842 (August). *Incillaria*, Benson, *Ann. and Mag. Nat. Hist.* vol. ix. p. 486.
1842 (Sept.). *Tebenophorus*, Binney, *Boston Journal*, iv. p. 171, and 1844; Wyman, *ibidem*, p. 410.
1866. *Philomycus* (anatomy of), Keferstein, *Zeitsch. Wissensch. Zool.*, vol. xvi. p. 183.
1866. *Incillaria* and *Meghimatium* (anatomy of) Keferstein, "Malacoz. Blætter," vol. xiii. p. 64.
1869. *Tebenophorus*, Binney and Bland, "Land and Fresh-Water Shells N. Am.," pt. i. "Pulm. Geoph.," p. 295.
Philomycus apud H. and A. Adams, Chenu, E. v. Martens, &c.

It must be admitted that the original characteristic of the genus by Rafinesque is a very unsatisfactory one, but that is the case with many other old definitions. When Rafinesque wrote that *Philomycus* has no visible mantle, everybody* could, I think, fancy that the mantle must extend over the whole body, if the animal can at all be closely compared with *Limax*, or else it could not be a mollusc at all. This was indeed well understood by Férussac, who in the next year referred to *Philomycus*, besides the four insufficiently described species of Rafinesque, *Limax carolinensis* of Bosc., well known from description and figure (copied in "Hist. Nat. des. Moll.," pl. vi. fig. 3). And as Rafinesque's species had not been rediscovered, and his descriptions not made more complete, *Ph. carolinensis* remained to be considered as the type of the genus, though I do not think that there can be much doubt on the point that Férussac had correctly interpreted Rafinesque's meaning. In any case there was no sufficient ground for introducing the name *Tebenophorus* for the same species.

Keferstein (*loc. cit.*) has shown by the anatomical examination of the three typical species, *Philomycus carolinensis* (seu *Tebenophorus*), *Meghimatium striatum* and *Incillaria bilineata*, that all three genera have to be united into one. The general anatomy and dentition, &c., agree in all, the only traceable distinction of *Phil. carolinensis* consists in the presence of a small amatorial organ, situated at the entrance of the seminal receptacle. The presence or absence of this organ, or even of that of a special amatorial gland (see *ante*, p. 100), is rightly considered by Keferstein as insufficient for a generic separation of the American from the Indian species. I had frequent opportunities of satisfying myself of this by the observation that the development of that organ does not only appear to depend upon the age of the animal, but often even upon the season or peculiarities of the conditions under which the animal lives. As far as our materials enable us to judge, we can, I think, look upon *Philomycus* as a well established

* Binney writes in 1841 (*Boston Journ.* iv. p. 174) of his *Philomycus dorsalis* "corpore . . . . . clypeo nullo," and on p. 171 of *Tebenophorus carolinensis* "clypeo lato et elongato, dorsum integrum vestiente;" and still both species have the mantle covering the entire upper surface of the body, and both are *Philomycus* (or *Fallifera* of Morse).

genus. For the present it has to be regarded as the sole representative of the family. The finely radiately striated (in *Ph. dorsalis* coarsely ribbed) jaw in part resembles that of the VITRINIDÆ, but the dentition has decidedly more the character of true HELICIDÆ.

I have to notice one new species found in Penang.

PHILOMYCUS PICTUS, n. sp. Pl. iii. figs. 9–14.

Ph. corpore tenuiter cylindraceo, plus minusve (35 ad 46 m.m.) extenso, antice rotundate subtruncato, postice acuminato, livido copiose mucoso, suprâ pallio lævigato, lateraliter atque in parte postica nonnunquam subgranuloso tecto, fasciis tribus longitudinalibus atratis, reticulationibus ejusdem coloris junctis, picto, faciâ centrali latissimâ, duabus alteris tenuioribus ad latus dorsi sitis et a margine inferiore distantibus; orificio pulmonari antice ad latus dextrum in incisione pallii sito, circiter 5 ad 7 m.m. a terminatione antica distante; pedunculis oculiferis circ. 5 m.m. longis, tentaculis brevissimis, ambobus pallidissimis; pede infrâ transversim plicatello, livido.

During life the length and comparative thickness of the animal changes very rapidly, as may be noticed from a comparison of the two sketches taken from life and one from a specimen preserved in spirit. The animal is covered by a thick layer of mucous secretion, it is very active, and readily burrows in light decomposing vegetable substance. The three black longitudinal bands are connected by a similarly coloured network which continues, interspersed with, or dissolved into, little dots, to the lower edge of the mantle. The three distinctly marked bands distinguish the present species from the Javaen *Ph. reticulatus*, according to Férussac's figures 2* and 3 on pl. viii. E., p. 96[5], "Moll. Terr. et Fluv.," vol. ii. The peduncles are about 5 m.m. long, provided with distinctly developed globules on which the small black eyes are situated; the tentacles are very short, and when the animal moves about scarcely noticeable; both are very pale coloured.

The anatomy of the species almost perfectly agrees with that given by Keferstein of *Ph. striatus* and *bilineatus*. The internal pulmonary cavity extends to about one anterior fourth of the length of the body, and in the fresh animal is always well marked by the mantle above it being somewhat inflated. On this inflated portion the mantle is smooth, on the other parts generally slightly rugose.

The genital organs (comp. fig. 13) have no special amatorial gland. The seminal receptacle is a globular pedunculated bag, situated a short distance from the hermaphrodite opening. In

* E. v. Martens ("Preuss. Exp. nach Ost-Asien.," Landschnecken, p. 182) refers to this figure as a synonym of Hasselt's *Parmacella reticulata*, which he quotes as *Parmarion reticulatus*. I do not know Hasselt's original figure, but surely the one given by Férussac does not represent a *Parmacella* or a *Parmarion*.

two specimens which I examined, I noticed the development of a strongly fibrous bundle of muscles at the entrance of the receptacle. where it branches off from the oviduct, but there was no special amatorial organ present.

The jaw is semilunar, strongly curved, thin, radiately striated; when laid flat about one mill. broad.

The radula is 2·8 m.m. long, only about 0·5 broad; there are about 170 rows, and eighty-seven teeth in each row: the central tooth with a symmetrical simple curved cusp, the laterals with a more oblique but simple cusp, both it and the basal plate gradually decrease in height until the last teeth become almost linear, and form a confluent row.

None of the other organs require any special notice.

I found three specimens of this species among old decaying vegetable matter on the ground at the northern base of Penang hill, about 100 feet above the sea.

Fam. PUPIDÆ.

This family is represented in India and Burma by *Hypselostoma*, *Boysia*, and various sub-genera of *Pupa*, all of small size. Among the *Pupæ* found in Burma and the adjacent countries, inhabited by a large number of Malayan forms, the majority are referable to Albers' sub-genus *Scopelophila*, the type of which is *Pupa Kokeilii*, Rossm. The shells are small, sub-conic or sub-cylindrical, composed of four to eight whorls, with a moderately thin, semi-corneous or corneous texture, covered by a brown cuticle; the last whorl is rimate at the base, always somewhat rapidly turned to the front, generally slightly ascending at the aperture, which is internally furnished with teeth on the whole peristome; commonly there is a bifid tooth on the inner lip, it is larger than any of the others. Some of the species appear to differ from *Pupilla* merely by the peculiar turn of the last whorl towards the front, thus showing a strong affinity to *Hypselostoma*. The Indian species of *Scopelophila*, as far as I observed them, have the pedicles well developed and the tentacles short.

A second small group of *Pupa*, which is found in India, Burma, and the country southward, is characterized by a sub-conic or ovate shape, composed of three to five whorls, of a thin corneous texture, covered with a transversely striated cuticle; the last whorl is not ascending, the aperture generally edentulous; the columellar lip is externally near its attachment somewhat expanded, mostly covering the umbilical region, while internally at the base it is twisted and occasionally provided with a small tooth. I propose for this sub-generic group the name

Pupisoma,

and regard as the type of it the Moulmein *P. lignicola*, described in "J. A. S. B.," vol. xl. pt. ii. p. 171, pl. vii. fig. 3. The animals

have very short pedicles and barely a trace of tentacles. They generally live on wood.

PUPA [SCOPELOPHILA] PALMIRA, n. sp. Pl. iii. fig. 3.

P. testa ovate cylindracea, rimata, sordide albida, cornea, apice obtusiuscula; anfractibus quinque, convexis, gradatim accrescentibus, sutura simplici junctis, sublævigatis, fere politis, lineis, nonnullis incrementi transversis obliquis, exilissimis notata; apertura fere verticali, subquadrangulari, intus quinque-dentata albida; labro undique expansiusculo atque paulum incrassato, extus infra suturam sinuoso, intus profunde bidentato (dente supero minori), ad basin dente unico minuto et ad medium collumellæ altero fortiori instructo; labio tenui, adnato, extra medium prope angulum posteriorem aperturæ dente lamelliforme bipartito munito.

Long. testæ 2·15, latit. 1·, long. apert. 0·8, lat. 0·6 m.m.

Hab.—Penang et in Provincia Wellesley dicta, sub corticem *Cocos nuciferæ;* testa rarissima.

This is of exactly the same type as the Arrakanese *P. filosa*, described at p. 333 of the "Journal" for last year, but it is larger, more cylindrical, and has one tooth more in the aperture. From *P. Avanica* it differs by less closely wound whorls and by the inward dentition of the aperture.

It appears to be a very rare species. I found one specimen under the bark of a cocoa-nut tree on Penang, and two others on the opposite coast in the Wellesley Province.

PUPA [PUPISOMA] ORCELLA, n. sp. Pl. iii. fig. 2.

P. testa subglobose conoidea, apice obtusa, angustissime perforata, tenui, cornea; anfractibus 3·5, valde convexis, sutura simplici junctis, transverse filose striolatis; apertura subrotundata, paululum obliqua, edentula; margine externo tenuissimo vix repandiusculo, columellari albescente, vix torto, supra reflexo, umbilicum fere omnino obtegente.

Alt. testæ 1·7, diam. 1·25, alt. aperturæ 0·6 m.m.

Hab.—Penang, sub corticem *Cocos nuciferæ*, haud frequens.

The animal is grey with dusky pedicles, but no perceptible trace of tentacles. The species differs from *P. lignicola* (*loc. cit.*) by a shorter and broader form, more convex whorls, and by a very slightly expanded and thin outer lip, In fresh specimens some of the transverse striæ of the cuticle are rather stronger than others, but they very soon wear off.

FAM. STREPTAXIDÆ.

This family is represented by the single species *Ennea bicolor*, occurring with *Stenogyra gracilis*, though not very commonly. (Comp. "J. A. S. B.," 1871, vol. xl. pt. ii. p. 169).

FAM. VERONICELLIDÆ and VAGINULIDÆ.

I have collected two species, which are by authors usually referred to the *Vaginulus*, and with which Blainville's *Veronicella* is considered as identical.

The one species is the same as *Vaginulus Birmanicus*, briefly described by Theobald in "Journ. A. S. B.," vol. xxxiii. for 1864. It is found about Calcutta, extending throughout Bengal up to the base of the Sikkim hills, through Arrakan, Tenasserim, to Penang. A specimen obtained at Singapore does not appear to differ; E. v. Marten's *V. Hasselti* ("Preuss. Exp. Ost-Asien.," Landschnecken, 1867, p. 176, pl. v. figs. 2 and 4) from Sumatra, Borneo, &c., also appears to be the same, and it seems to me very probable that it is the true *Onchidium molle* of Hasselt.

A second species is very closely allied to *Vaginulus Touranensis*, Eydoux and Souleyet ("Voyage de la Bonite," pl. xxviii. figs. 4–7), found by M. Gaudichaud at Touranne in Cochin China.

A close examination of various Eastern species of what authors usually call *Vaginulus* or *Veronicella* appears to me to indicate that a great confusion has been brought about into the definition of these terms. First of all, we have to return to the typical species of those two generic terms, leaving all subsequent researches regarding other species out of the question.

Blainville's description of his *Veronicella lævis* in 1817 was incorrect as regards the existence of a rudiment of a shell. The mistake was, at least partially, corrected by Blainville in "Dict. d. Sc. Nat.," vol. lvii. p. 348,* and Keferstein, after discussing the opinions about this genus, in *Zeitsch. Wiss. Zool.*, xv. 1864, defined † *Veronicella* as it ought, I think, to be accepted.

The animals have the sexes distinct in one individuum, the male organ under the right peduncle, the female about the middle of the lower right side of the mantle; tentacles bilobed; the anal and respiratory orifices are at the posterior end; the jaw and teeth of the radula resemble those of the HELICIDÆ. Thus the general anatomical structure of *Veronicella* agrees in some respects with *Onchidium* (Comp. Stoliczka in "J. A. S. B.," xxxviii. pt. ii. 1869, p. 88, pl. xiv.), but in this genus the female genital opening lies with the two others at, or close to, the posterior end; the teeth are peculiarly hook-shaped, and there is no jaw present. As one of the characteristic figures of a *Veronicella* I may mention *Vag. Solea*, d'Orb. ("Voyage dans l'Am. Merid.," Moll. pl. xxi.), from Buenos Ayres, or *Vag. Luzonicus*, Eydoux and Souleyet, in

* In this article, Blainville strangely makes a great mistake in considering *Vaginulus*, *Veronicella*, and *Onchidium* as identical.

† Comp. also Humbert in "Mem. Soc. Ph. & Sc. Nat. Genève," vol. xvii., and E. v. Martens "Preuss. Exped.," p. 175, *Vaginulus*.

"Voyage de la Bonite," Zoologie, vol. ii. p. 495, pl. xxviii. figs. 1–3. Thus our species will have provisionally to stand as

VERONICELLA BIRMANICA (Theob.).

It is found all over the island, up to the top of Penang hill, but is not common, and the specimens are mostly small, about 1 or 1·5 inches. The median dorsal pale stripe generally becomes distinct only in older specimens, and the lower side of the mantle is uniform livid; in very young specimens the pale stripe is absent, and the mantle marked below with dark dots.

The name *Vaginulus* was introduced by Férussac in 1821. Judging from the description of the genus, in part at least, from the arrangement of the species and from the anatomical account given by Blainville, it is, I think, clear, that Férussac considered the first described species, *V. Taunaysii*, as the type of the genus (Comp. "Moll. Terr. and Fluv.," ii. pp. 96*p*, 96*q*, and explic. des pl. No. 13, pl. 8*c*.). Férussac's characteristic of the genus places the pulmonary opening at a distance of two-fifths of the length of the body from the anterior end, and on the lower right side of the mantle; the female sexual opening is said to be on the same side, about the middle; the position of the anus is not mentioned. Blainville's account of the anatomy is not clear, and partly contradictory to Férussac's statement. Some of the figures appear to leave no doubt that the position of the female sexual organ is the same as that indicated by Férussac, in others (figs. 1 and 3) its situation is too much backward. The anus appears to be situated, according to fig. 1, near the sexual opening, but again it is said to terminate with the anus at the posterior upper end of the foot. In the figures 2 and 3 (*loc. cit.*), which give an insight into the whole anatomy of the animal, the true termination of the intestines is nowhere given. All this is very unsatisfactory.

Eydoux and Souleyet in their figure of *Vaginulus Tourannensis* also record a small opening at the posterior lower right end of the mantle. I can scarcely believe that this is correct; it is probably only a fault of the artist, who thought that an opening must exist there, because it is clearly seen in the other species on the same plate *Vag. Luzonicus*, which is a *Veronicella*.

My reason for doubting the correctness of Eydoux and Souleyet's figure is the very careful examination of the Penang species, which, as already mentioned, is closely allied to *V. Tourannensis*, if not really identical with it.

The Penang species has the following generic characters, as compared with those of *Veronicella*:—

The sexes are distinct, the male opening is under the right peduncle, the female sexual opening lies, together with the anus and the pulmonary orifice, at the lower right side of the mantle, about two-fifths of the length of the body distant from the front.

The sexual opening is nearest to the edge of the foot, then comes the anal, and then the respiratory one; they are only separated by thin laminæ from each other. There is no jaw present, the manducatory organ consisting of a simple muscular tube, much as in *Streptaxis* or *Testacella;* the radula is short, composed of simple pointed teeth which are absolutely identical with those of the two last mentioned genera. There is no opening whatsoever at the posterior end of the foot or mantle; the pointed end of the intestinal organs is only attached by a bundle of muscles to the terminal inner surface of the mantle.

On p. 96*r* of Férussac's "Moll. Ter. and Fluv.," Blainville says, that the upper border of the mouth is provided with a dental comb ("peigne dentaire"), and further on, that the buccal cavity is supplied on its inner upper surface with very small sharp points ("trés petites pointes acérées"). The latter statement evidently refers to sharp pointed teeth of the radula, but does the former mean to indicate the presence of a jaw, such as exists in *Veronicella?* This is a question of great importance; for if the presence of a jaw can be proved, it would certainly not support the generic indentification of our Penang *Vaginulus* with *Vag. Taunaysii.*

There are also a few peculiarities in the other anatomical structure, but on the whole this latter well agrees with that given by Blainville of *Vag. Taunaysii*, with the exception of one or two organs which he evidently misinterpreted.

My doubts against a generic identity of *V. Taunaysii* with *Veronicella*, as formerly defined, appear to me to be supported also by external differences in the shape of the body. In *V. Taunaysii*, as well as in the Penang species, and in *V. Tourannensis*, the body is slender and high, so to say nearly cylindrical, the globules on the tentacles are well developed, the appendages of the latter large, the posterior end of the foot is pointed, and somewhat projecting beyond the termination of the mantle. In *Veronicella*, on the contrary, the body is more depressed, and of a generally more ovate shape, the lower appendage on the tentacles is smaller than the tentacle itself, the end of the foot is more rounded and not, as a rule at least, projecting beyond the termination of the mantle.

E. v. Martens, when speaking of *V. Taunaysii* ("Preuss. Exp. nach Ost-Asien," Landschnecken, p. 6), says that the slight lateral expansion of the mantle and the higher body distinguish it from all other species collected in India, and this opinion is, I think, strongly in favour of my presumed distinction between *Veronicella* and *Vaginulus;* for it also exactly applies to the Penang species.

Finally, I must draw the attention to the remarkable external similarity in the form of the body of *Vaginulus porulosus*, Fér. ("Moll. Ter. et Fluv." ii. p. 96[7], pl. viii. E, fig. 5) with that of a *Testacella.* The former species is recorded after a drawing com-

municated to Férussac by van Hasselt, and is no doubt from Java, or one of the adjoining islands. I think it represents a true *Vaginulus*, and not a *Veronicella*.

I have placed the above discussion before my malacological friends, because I consider a satisfactory solution of the points in question of considerable importance. The information is not easily obtainable, as the necessary materials are very much scattered about. If my suppositions prove correct, the so-called AGNATHA group, and especially the TESTACELLIDÆ or STREPTAXIDÆ, will appear before us in a quite different light when compared with the other groups. They will show that certain characters remain constant under different physical conditions, while others change, and that the change takes place according to certain principles, affecting similar or the same organs. Extended observations of this kind must give us the key to a correct systematic arrangement.

Our special question cannot be solved, unless Blainville's and Férussac's somewhat contradictory accounts of the structure and anatomy of *Vaginulus Taunaysii* had been satisfactorily settled. I hope to have myself an early opportunity of examining one of these animals, and until such a time I will postpone the detailed description of the Penang species (and of another new one from Sikkim), together with their anatomy, which requires a careful comparison with that of *Vaginulus* and *Onchidium*, of each of which I will have to describe several interesting new forms.

Explanation of Plates.

Plate I.

Figs. 1– 3. *Rhysota Cymatium* (Benson), p. 98; a young, an adolescent and an adult shell.

,, 4– 7. *Rotula bijuga*, n. sp., p. 101; four full-grown specimens, variable in the height of the spire.

,, 8. *Sitala carinifera*, n. sp., p. 103; 8, natural size; 8*a*. 8*b*, 8*c*, enlarged views.

,, 9. *Macrochlamys stephoides*, n. sp., p. 104; three views in natural size.

,, 10. *Microcystis palmicola*, n. sp., p. 105; 10, natural size; 10*a*, 10*b*, 10*c*, three views enlarged.

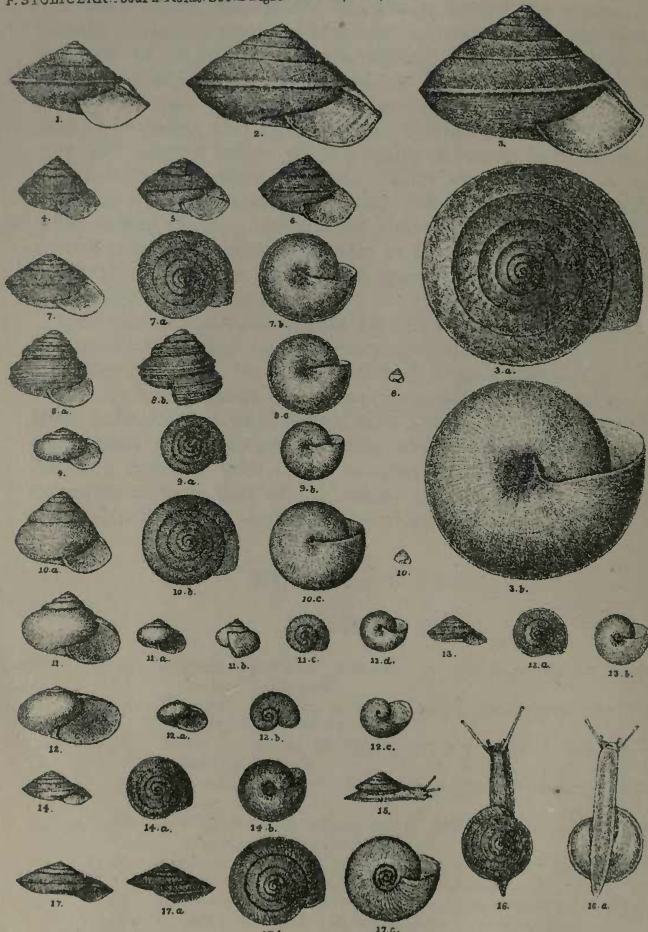
,, 11. *Helicarion permolle*, n. sp., p. 105; 11, twice the natural size; 11*a*, 11*b*, 11*c*, 11*d*, views in natural size.

,, 12. *Vitrina nucleata*, n. sp., p. 110; 12, front view in twice the natural size; 12*a*, 12*b*, 12*c*, three views in natural size.

,, 13. *Trochomorpha Cantoriana* (Benson), p. 109; three views in natural size.

,, 14–16. *Trochomorpha castra* (Benson), p. 108; 14, 14*a*, 14*b*, three views in natural size; 15, side view of a specimen from Calcutta; 16 and 16*a*, top and lower views of a Darjíling specimen.

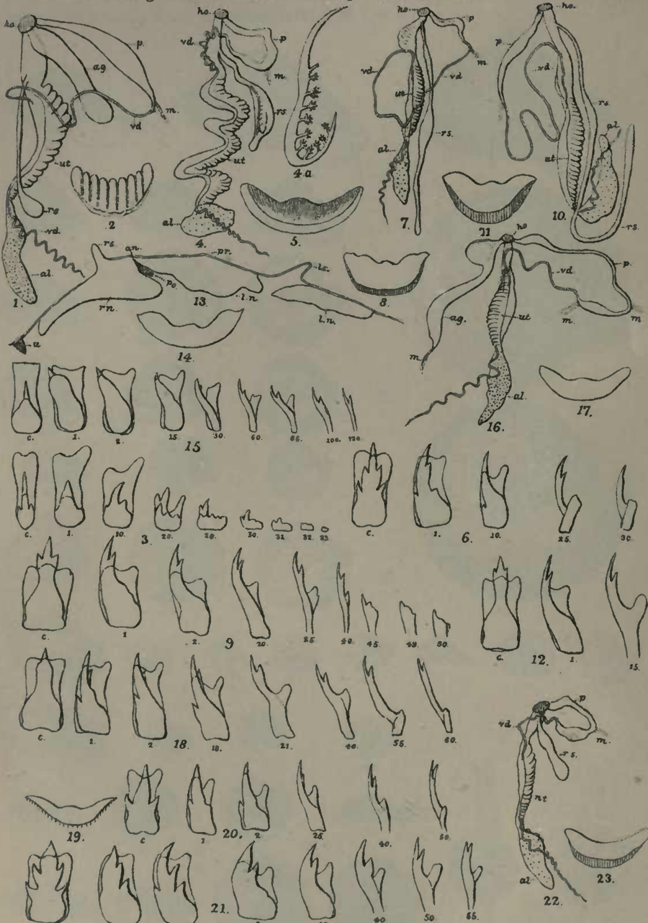
,, 17. *Timorensis*, Mart., p. 109; four views in natural size.



Figs 1-3. Rhysota cymatium.
" 4-7 Rotula bijuga.
" 8. Sitala carinifera.
" 9. Macrochlamys stephoides.
" 10 Microcystis palmicola

Fig. 11. Helicarion permolle.
" 12. Vitrina nucleata.
" 13 Trochom. Cantoriana
" 14-16 " Castra.
" 17. " Timorensis.

For further explanation see p. 124



1-3. *Fruticicola similaris*, p. 120.
4-6. *Vitrina nucleata*, p. 115.
7-9. *Trochomorpha castra*, p. 108.
10-12. " *Timorensis*, p. 109.
13-15. *Rhysota cymatium*, p. 98.
16-18. *Rotula byaga*, p. 101.
19-20. *Macrochl. etephoides*, p. 104.
21-23. *Helicarion permolle*, p. 105.

For further explanation See p. 123

STOLICZKA Penang shells. Journ. Asiat. Soc. Bengal, Vol. XLII, Pt. II, 1873. Pl: III.

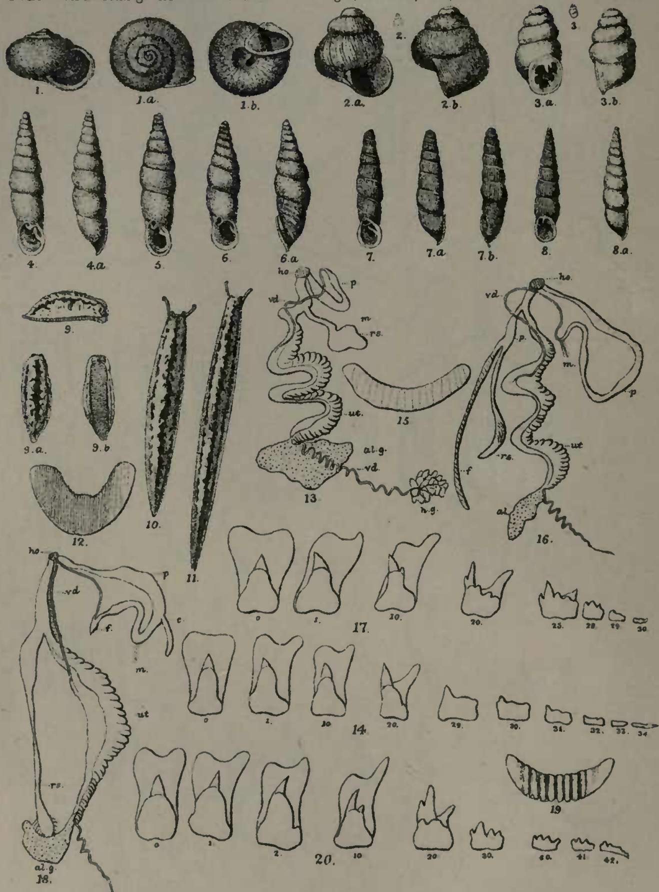


Fig: 1. 18. 20. *Trachia Penangensis*, p. 112
„ 2 *Pupa orcella*, p. 120.
„ 3 „ *palmira*, p. 120.

4-6, 15-17. *Clausilia Penangensis*, p. 115.
7-8. *Clausilia filicostata*, p. 116.
9. 14. *Philomycus pictus*. p. 118

For further explanation see p. 125

Plate II.

Figs. 1– 3. *Fruticicola similaris*, Fér., p. 113.
,, 4– 6. *Vitrina nucleata*, Stol., p. 110; 4*a* represents the side view of the problematic amatorial organ enclosed in the *bursa seminalis*.
,, 7– 9. *Trochomorpha castra* (Benson), p. 108.
,, 10–12. ,, *Timorensis*, Mart., p. 109.
,, 13–15. *Rhysota symatium* (Bens.), p. 98.
,, 16–18. *Rotula bijuga*, n. sp., p. 101.
,, 19–20. *Macrochlamys stephoides*, n. sp. p. 104.
,, 21–30. *Helicarion permolle*, n. sp., p. 105.

All the figures are enlarged; the measurements in natural size are given in the text referred to.

Plate III.

Figs. 1. *Trachia Penangensis*, n. sp., p. 112; three views in natural size.
,, 2. *Pupa* [*Pupisoma*] *orcella*, n. sp., p. 120; 2, natural size, 2*a*, 2*b*, enlarged.
,, 3. *Pupa* [*Scopelophila*] *palmira*, n. sp., p. 120; 3, natural size, and two views enlarged.
,, 4– 6. *Clausilia* [*Phædusa*] *Penangensis*, n. sp., p. 115; 4, 4*a*, attenuated var.; 5, elongately fusiform var.; 6, 6*a*, fusiform variety; all figures in natural size.
,, 7– 8. *Clausilia* [*Phædusa*] *filicostata*, n. sp., p. 116; views of two different specimens in natural size.
,, 9–14. *Philomicus pictus*, n. sp., p. 118; 9, 9*a*, 9*b*, three views taken from a specimen in spirit; 10 and 11, two views of the same specimen in different states of expansion, taken from life; all these figures are in natural size, but the other figures, representing the genital organs, the jaw and teeth, are enlarged.
,, 15–17. *Clausilia Penangensis*, vide p. 115.
,, 18–20. *Trachia Penangensis*, vide p. 112.

Explanation of the letters used on pl. ii. and iii.:—

ho = hermaphrodite opening.
ut = uterus.
al = albuminous gland.
vd = vas deferens.
ag = amatorial gland.
p = penis.
m = retractile muscle.
rs = receptaculum seminis.
po = pulmonary opening.
an = inner, or posterior, angle of mouth.
pn = peripherical angle.
u = umbilicus.
rs = right shell lobe.
rn = ,, neck lobe.
ls = left shell lobe.
ln = ,, neck lobe.

The small letters below the teeth refer to the distance of each tooth from the respective central tooth in each series.

V.

NOTES ON THE MALAY ARCHIPELAGO AND MALACCA.

By W. P. Groeneveldt, Esq.

["Verhandelingen van het Genootschap van Kunsten en Wetenschappen," vol. xxxix., Batavia, 1879.]

A careful perusal of the geographical literature of the ancient Chinese has shown that they have not gained their knowledge of south-eastern Asia by bold voyages of discovery; slowly and cautiously they have crept along its shores, probably not venturing to a country before they had become acquainted with it by others.

The proofs for this assertion lie partly beyond the scope of our present task, but even in the following notes sufficient evidence will be found of what we advanced just now.

When the Chinese turned themselves towards the south, the first country they visited was, of course, the northern part of what we call Annam now; pushing on along its coast they arrived at Cambodja, and next turned into the gulf of Siam. Here they were detained a considerable time, for in Chinese history we find abundant information about these countries, long before it knows anything of those further south, and it would seem that they did not go on in the original direction, before they had got to the coast of the Malay peninsula, which gradually showed them their way to Sumatra and Java.

This process must have taken many centuries, before it was accomplished so far: a hundred years before Christ the Chinese were in northern Annam, but during the first centuries of our era, though Chinese history was then already thoroughly established and written according to a reliable system, we find a complete absence of information about the countries which form the object of our present research. It would be difficult to explain this by saying, that during these times China was often divided under different rulers and generally more or less in a disturbed state, so that the adventures of the merchants and mariners of the southern provinces, Fukian and Kwangtung, who then, as now, had the monopoly of foreign trade, might have remained unknown to hose who collected materials for history in other parts of the country; by this argument the loss of much information might be accounted for, but it would remain improbable that everything had

disappeared, without leaving any trace. And though the following extracts, extremely scanty and defective, especially in the beginning, do not tell us directly at what time the Chinese began to navigate and to establish themselves in these parts, we have a valuable indication in the travels of the Buddhist pilgrim, Fahien, who visited Java in 413. He had travelled overland to India and arrived from Ceylon in an Indian vessel. He found no Chinese in Java, and returned to China in an Indian ship again. We shall revert more amply to this traveller when treating of Java, but here already we may say that the Chinese, in his time at least, had not yet penetrated to that country.

On the other hand, we have numerous reasons to believe that the Indians and Persians went to China by sea at a very early date; we see it in the itinerary of Fahien, mentioned just now, we see it on many other pages of the geographical literature of the time, and, lastly, all this is fully confirmed by indications derived from other sources. The knowledge of Rome and Roman products were brought to China in this way, if not by Romans themselves, at least by Roman subjects.

We may therefore feel sure not to be far from the truth, when we say that the Indians and Persians reached China a little before the commencement of our era, that the Chinese began to trade towards the south about that time also, but that they arrived in the Malay archipelago certainly not before the fifth century, probably even later, for their first notices of these countries look as if they had been obtained from hearsay, rather than from personal knowledge.

There are still many subjects which might find a place amongst these preliminary observations, but we prefer the plan of reserving them until they naturally present themselves in the course of the following pages, when they may be treated in explanatory notes as the case requires. We only add two passages from the Chinese Dynastic Histories, which, though not giving any details about the parts we are considering. still are the first mentioning them at all. They will also be found to tell something of that earliest intercourse, about which we have ventured to express an opinion just now.

History of the first Sung Dynasty (420—478). Book 91, p. 1.

"The southern and south-western barbarians live, generally speaking, to the south and south-west of the land of the Giau-chi,*

* The Giau-chi lived in northern Annam or Tungking; the Chinese called their country 交趾, or by abbreviation, as here, 交州.

and also inhabit the islands in the great ocean; the distance is about 3 to 5 thousand *li** for those that are nearer, and 20 to 30 thousand *li* for those that are farther away. When sailing in a vessel it is difficult to compute the length of the road, and therefore we must recollect that the number of *li*, given with respect to the barbarians of the outer countries, must not be taken as exact."

History of the Liang Dynasty (502—556). Book 54, p. 1.

"The countries of the southern ocean are, generally speaking, situated at the south-west of the land of the Giau-chi, and on the islands of the ocean. The nearest are away from 3 to 5 thousand *li*, and the most remote from 20 to 30 thousand *li*; their western parts join the countries at the west of China.

"In the period Yuan-ting of the Han dynasty (116—110 B.C.), admiral Lu-po-teh† was sent to open the south; he founded the district Jih-nan‡ and since that time the countries beyond its borders have all come to court and presented tribute.

"Afterwards, during the reign of the emperor Hsüan of the Han dynasty (73—49 B.C.), the Romans and Indians§ have sent envoys and presented tribute through the same way.

"In the time of Sun-ch'üan, of the house of Wu (222—251), two functionaries, called Chu-ying and K'ang-tai,|| were ordered to go to the south; they went to, or heard from, a hundred and more countries, and made an account of them.

"During the Chin dynasty (265—419) those who came to China were very few, and therefore they were not mentioned in the history of that dynasty. In the Sung (420—477) and Ch'i (479—501) dynasties, more than ten countries made their appearance, and for the first time a notice of them is given. Since the accession of the Liang dynasty (502—556), they have come over the sea every year for getting an almanac and acquitting themselves of the duty of tribute, in greater number than in any former time."

It will be observed that the second extract speaks of an embassy, or expedition, sent to foreign countries between 222 and 251. What countries these were is not stated, but we may believe that

* The Chinese *li* 里 has, in the course of time, considerably changed its value; at the time the above passage was written it may be taken at 340 in a degree.

† 伏波將軍路博德.

‡ 日南, Jih-nan, according to Chinese writers a kind of colony on the spot, or in the neighbourhood, of Hué.

§ 大秦 Ta-tsin, and 天竺 T'ien-tak.

|| 朱應 and 康泰.

the Malay islands were not amongst them, otherwise their name would have appeared at that time already in the annals of China. With the exception of this single instance, the historian only speaks of distant nations who came to China, not of Chinese going to them.

This brings us also to the tribute, which is said to have been presented by those foreign countries, a matter with which we shall have much to do yet, and which may well be discussed at once.

From the beginning of Chinese history up to the present day, their annals record numerous instances of foreign princes doing homage to the emperor of China in this manner. Some people have tried to dispose of this question with the assistance of the well-known conceitedness of the Chinese, and charged them on this score with boastful misrepresentation or even deliberate falsehood, but such an explanation can only have its ground in total ignorance of the facts, and surely the most sceptic reader will not be satisfied with it after perusal of the following pages.

Fortunately it is possible to take a more natural view of the case.

In the first place we know, by our own experience, that the princes of the smaller states in Asia were often engaged in trade on their own account, and when they extended their operations to China, it was but natural that they sought to propitiate the ruler of that country by a few presents, which they soon saw were so acceptable there. This example was often followed by private traders, who, in order to gain facilities for their commerce, or perhaps to get access to the capital, a paying mart for their merchandise, assumed the character of envoys from a distant country, and set apart a few articles of their stock to be presented as tribute, knowing at the same time that even these would not be lost, but probably reciprocated above their value. And lastly, it cannot be denied that China formerly occupied a very exalted place in the estimation of the greater part of Asia; its higher civilisation, the splendour of its court, the richness and extent of its territory, easily account for this feeling of veneration. Compared with China all other countries were petty and insignificant, and it would seem that the different princes thought it an honour to have relations with it, just as once, on the other side of the old world, it was a point of national pride to be an ally of Rome. On different occasions, especially on their accession to the throne of their country, these princes sent envoys with presents as a homage to the emperor of China, and, besides costly gifts, they received in return letters, seals, royal insignia or other tokens of investiture, which seem generally to have been highly prized. At the same time this sending of envoys and presents could hardly be called a burden: the presents were requited in the most liberal way, the envoys lived at the expense of China, and, above all, it offered an

occasion for trading in places which were not accessible otherwise. The introduction of the Islam, and the arrival of Europeans, have put an end to these relations for the greater part; in Siam they have been broken off under the latter influence not many years ago, and they only continue to exist in Annam, Corea, Birma and a few smaller countries of the interior, a last remnant of what was general once.

On the other hand we need not wonder that the Chinese attached so much importance to these embassies, and were prepared to go to all the expenses which they necessarily entailed. The supremacy of China over all other countries is, and has always been, a national dogma, more deeply rooted in the Chinese mind than any other conviction. Their emperor is appointed by Heaven to be the ruler of the whole earth, but only Heaven's chosen people, the Chinese, are directly governed by him, and he controls the outside barbarians not more than is necessary for the interests of this favoured nation, which must be the chief object of his care. All however owe him allegiance, and if they come forward showing their sense of this duty by presenting tribute, be it ever so little, they must be graciously received and assisted according to their wants. The civilized rule of China is not fit for these benighted barbarians, therefore they are suffered to arrange their government as they like best, and even if they fail to recognize the superiority of China, and abstain from doing homage to the emperor, it is not necessary to compel them: China has nothing to gain from intercourse with them, whilst for them it is an occasion, not only of profiting by the munificence of the imperial presents, but also of coming within the enlightening and renovating influence of Chinese civilization. Many Chinese emperors however were not so wholly indifferent to these tokens of respect from distant countries, which seem to have gratified their pride; they went to considerable expense in order to encourage them, and gradually it became the custom, on the accession of a new dynasty, to send envoys to the different countries which were in the habit of presenting tribute, informing them of the change that had taken place and inviting them to continue their allegiance.

If we recollect that the Chinese mind has always been deeply imbued with these ideas, it is not necessary to tax them with wilful misrepresentation, even when they have construed the most ordinary attempts at commercial intercourse into an acknowledgment of their superiority; at the same time the more enlightened among their historians, though never doubting that it was the duty of other countries to bring tribute to China, do not deny that the sense of this obligation was often very little developed, and that with many the motive was rather to gain the material benefits attached to it.

We may now proceed to give the notices on the countries mentioned in our title, which have been compiled from Chinese sources, and will be arranged as follows:

JAVA,
SUMATRA,
BORNEO,
THE ISLANDS TO THE EAST OF THESE, and
THE MALAY PENINSULA,

whilst under each head of this division those smaller islands will be dealt with, which may be looked upon as natural dependencies of the others.

JAVA.

The first notice of this country is found in the itinerary of the Buddhist priest Fahien, who, in the year 400 of our era, went from China to India overland and returned by sea to his native country, on which occasion he visited Java in 414 The book containing his travels, called "An account of the Buddhist Countries" * has been translated into French by Abel Rémusat, whilst afterwards the Rev. S. Beal has given a much improved English version of it.[1] Of Java the writer says not much, but the account of his sea voyage is sufficiently interesting to be given in his own words.

"Fahien left Ceylon on board a large merchant vessel which carried about two hundred men. Astern of the great ship a smaller one was fastened, as a provision in case of the large vessel being injured or wrecked during the voyage. Having got a fair wind they sailed eastward for two days, when they encountered a storm and the ship sprang a leak. The merchants then wanted to rush into the smaller vessel, but the crew of that ship, fearing that it would become too crowded, cut the towing cable and fell off. The merchants were very much afraid and their lives stood in the greatest danger. Then dreading lest the leak should gain upon them, they forthwith took their bulky goods and cast them overboard. Fahien also flung overboard his water-pitcher and his washing basin, as well as other portions of his property. He was only afraid lest the merchants should throw into the sea his sacred books and images. And so, intensely fixing his thoughts on Avalokiteshwara, and invoking the Buddhist saints of China, he said: 'I have wandered so far in search of the law; may you by your spiritual power drive back the water and cause us to reach

* 法顯佛國記, "Relation des royaumes bouddhiques" (Rémusat), or "Records of Buddhist Countries" (Beal).

[1] [Compare now also Professor Legge's translation (Oxford, 1886), pp. 111 ff.]

some resting place.' The gale lasted thirteen days and nights, when they arrived at the shore of an island, and, on the tide going out, they found the place of the leak; having forthwith stopped it up, they again continued their voyage. In this sea there are many pirates: when one falls in with them he is lost. The sea is boundless in extent—it is impossible to know east or west, and one can only advance by observing the sun, moon, or stars; if it is dark rainy weather, one has to follow the wind in perfect uncertainty. During the darkness of night one only sees the great waves, striking each other and shining like fire, and sea-monsters of various descriptions. The merchants were much perplexed, not knowing what course to steer. The sea was so deep that no sounding could be taken, and also there was no place for anchorage. At length, the weather clearing up, they got their right bearings and once more shaped a correct course and proceeded onwards. But if (during the bad weather) they had happened to strike a hidden rock, then there would have been no way to escape alive. Thus they voyaged for about ninety days, when they arrived at a country called Ya-va-di.* In this country heretical Brahmans flourish, but Buddhism hardly deserves mentioning.† After having stopped here for five months, Fahien again embarked on another merchant vessel, carrying also a crew of two hundred men or so. They took with them fifty days' provisions and set sail on the 16th day of the 4th month. Whilst Fahien was on board of this ship they shaped a course N.E. for the province of Canton, in China. After a month and some days, in the second watch of the night, they met a violent gale, accompanied with pelting rain. The merchants and passengers were all terrified. Fahien, at this time also, intensely fixed his thoughts on Avalokiteshvara and all the priesthood of China, and had the good fortune, by the assistance of their divine power, to be carried through until daylight. When the day broke all the Brahmans, consulting together, said: 'It is because we have got this Buddhist priest on board with us that we have no luck and have incurred this great mischief—we ought to land this monk on

* 耶婆提. This name, written Jabadiu by Ptolemaeus, may be an abbreviation of Yava Dwipa, but then this abbreviation seems to have been generally used at that time, for if the Hindus on Java had called it by its full name, our author, who knew Sanscrit, would have transcribed it according to that form.—Yava Dwipa does not mean, as has been thoughtlessly said and repeated, *the country of the barley*, for the simple reason that barley could not grow there, but instead of barley we must read *millet*, of which there are different varieties indigenous in the island, many of them called by the generic name Java. It is not impossible that the first Hindus found this cereal used instead of rice, and that the latter was introduced by them.

† The Chinese text has: 佛法不足言 lit. *Buddha's law not sufficient to speak of.* This does not denote a total absence of Buddhism, but seems to indicate that this religion was practised by very few only.

some island, for it is not proper that we should all run danger for the sake of one man.' But a man who had taken Fahien under his care (dânapati) then said: 'If you land this monk, you shall also land me with him; and if not, you had better kill me: for if you really put this priest on shore, then, when we arrive in China, I will go straight to the king and tell him what you have done. And the king of that country is a firm believer in the law of Buddha, and greatly honours the monks and priests.' The merchantmen on this hesitated, and did not dare to land him. As the weather continued very dark, the pilots looked at each other without knowing what to do. More than seventy days had now elapsed, the food and water were nearly all gone; they had to use salt water for cooking, as they had only two pints of fresh water per head left, so that all was nearly finished. The merchants now deliberated and said: 'The ordinary time for the voyage to Canton is about fifty days, but now we have exceeded that time by many days already, surely we must have gone wrong.' On this they put the ship on a N.W. course to look for land, and after twelve days continuous sailing they arrived at the southern coast of Lau Shan, in the prefecture of Chang-kwang.* They here obtained fresh water and vegetables, and, from seeing a certain kind of herb, they knew that they were in China, but not seeing men or traces of them, they again scarcely knew what to think. Some said that they had not yet arrived at Canton, others maintained they had passed it. In this uncertainty, therefore, they put off in a little boat and entered a creek, looking for someone to ask what place it was they had arrived at. Just at this moment two men who had been hunting were returning home: on this the merchants requested Fahien to act as interpreter, and it was only then they knew what place they had come to."

From what follows in the original we know that they arrived on the 14th of the 7th month; they had been therefore just three months on their voyage.

The above extract teaches us more than would appear at first sight: we see under what difficult circumstances the Hindoo colonists in Java kept up the intercourse with their mother country and carried on trade even with China; we learn that they must have been in considerable numbers already, otherwise Fahien would hardly have said that their religion was flourishing there, and lastly, though the author, completely absorbed by his religious zeal, did not think it worth while to describe the country he visited, still we are able to construe from his narrative that no Chinese lived or traded there.

* Chang-kwang 長廣郡 was situated on the coast of the present province of Shantung, some thirteen degrees to the north of Canton. The following lines, being of less value for our purpose, have been considerably shortened.

In order to prove this assertion it will be necessary to give another passage from Fahien's book, containing an adventure which happened to him whilst visiting a temple at Ceylon. It runs as follows :

"Fahien had now been away from China many years ; the people with whom he conversed were all men from foreign countries ; even the mountains and valleys, the plants and trees which he saw around him, were unlike those of old times. Moreover his fellow travellers were separated from him—some had remained behind and some were dead—he had only his own shadow to look at, and so his heart was continually saddened, All at once, as he was standing by the side of this jasper image, he beheld a merchant present to it, as a religious offering, a white silk fan from China. Unvoluntarily he gave way to his sorrowful feelings, and tears filled his eyes."

If this man, who was moved to tears at seeing a Chinese fan, had found or met countrymen of his in Java, or even had known that they were in his neighbourhood, he would certainly have told us; and it cannot be by accident that he did not meet them, for he stayed in Java more than five months, about from December to May, the only time of the year that vessels from the north could arrive there.

We have no data to ascertain on what point of Java's coast he landed. The name of Java, in native as well as in Chinese sources, is especially given to the central and eastern part of the island, but it is used for the whole island too. As Fahien seems to have stopped at the first place of Java he arrived at, this would point to the western part of the island, which agrees with the circumstance that the ship, in which he went to China, took a north-eastern course on leaving, No other direct information is available about the Hindoo settlements in Java at that time, and it is quite probable that these extended then already to the central part of the island, where they had arrived at their fullest development a few centuries afterwards, as is attested by the numerous and magnificent remains of temples, and other religious structures, found in those parts. It is true that these ruins are Buddhist for far the greater part, but the plateau of Diëng, situated on the slope of the mountain Prahu, to the north of Pecalongan, at an altitude of 6500 feet, shows an extensive group of more or less ruined Saiva temples, without any trace of Buddhism, which points to a settlement of Saivas on the northern coast in that neighbourhood; and though the building of these temples, for which no precise data have been found yet, can hardly have begun earlier than the seventh or eighth century of our era, yet we may take for granted that the first Hindoo settlements in this neighbourhood must be placed much farther back, as these colonists cannot have built those numerous temples in a place so

distant and of such difficult access, before they were the undisputed masters of the country, and could compel the natives to perform the unintelligent share of the task.

On the other hand, though the Hindoo settlements of western Java have never arrived at the development of those in the central and eastern parts of the island, it is even in this western part that their oldest inscriptions have been found, being Sanscrit inscriptions on stone, which, judging by the form of the characters, seem to date from the fifth century, and may even be somewhat older. These inscriptions are Vaishnava (see Kern, Over den invloed der Indische, Arabische en Europeesche beschaving op de volken van den Indischen Archipel, pag. 7).

It seems therefore probable that the port, where Fahien landed at Java, must be sought somewhere on the western coast in Bantam, to the south of the entrance of the Strait of Sunda.

For many centuries after Fahien's time we unfortunately find no accounts of Chinese travellers visiting this island, the only available sources are the notices in the dynastic histories, which were compiled from the information current at the period. We will now proceed to give these notices in their chronological order.

History of the first Sung Dynasty (240—478). Book 97.

"In the year 435, the king of the country Ja-va-da,* whose name was S'ri-pa-da-do-a-la-pa-mo, † sent an envoy to present a letter and some presents."

This unimportant passage is translated only for the sake of the name given to the country, which may be compared to that of Ya-va-di, used by Fahien (v. pag. 7).

History of the Liang Dynasty (502—556.) Book 54.

"The country Lang-ga-su, or Lang-ga, ‡ is situated in the southern ocean, its length from east to west is thirty days, and from south to north twenty days, its distance from Canton is twenty-four thousand *li*. The climate and the products of the soil are about the same as in Siam.

"Lignum-aloes in its different qualities, and camphor oil, are very abundant everywhere.

"Men and women have the upper part of the body naked, their hair hangs loosely down, and around their lower limbs they only

* 闍婆達.

† 師黎婆達陁阿羅跋摩. The first four characters may be taken as the transcription of the Indian title Çripâda, i.e. the feet of his Highness.

‡ 狼牙脩 or 狼牙.

use a sarong of cotton. The king and the nobles moreover have a thin flowered cloth for covering the upper part of their body (slendang); they wear a girdle of gold and golden rings in their ears.

"Young girls cover themself with a cloth of cotton and wear an embroidered girdle.

"In this country they have made the city walls of piled up bricks; the wall has double gates and watch-towers.

"When the king goes out he rides on an elephant, he is surrounded with flags of feathers, banners and drums, and is covered by a white canopy. His military establishment is very complete.

"The people say that their country was established more than 400 years ago.

"It once happened that one of the succeeding kings was very unsatisfactory in his rule; one of his relations was a clever man, and therefore the people began to turn towards him. When the king heard of this, he put him in prison, but his chains broke spontaneously from him. On this the king thought him a supernatural being, and dared not hurt him, but sent him out of the country; whereupon his relative went to India, and there married the eldest daughter of the ruler of that country. Some time afterwards the king of Lang-ga died, and the exiled prince was called back by the noblemen to be their king. He died more than twenty years afterwards, and was succeeded by his son Pa-ka-da-to.*

"In the year 515 this prince sent an envoy of the name A-cha-to † to present a letter to the emperor, of the following contents: 'This is humbly presented to the son of Heaven, may he ever be most happy. He is averse to all that is bad, and loathes what is foolish. He feels compassion with all that lives, his loving heart knows no bounds. His appearance is imposing, his face beautiful, his body resplendent as the moon in the water, illuminating the whole world. The hair of his eyebrows is white as snow, it is shining and brilliant also, like the moon. All gods and good spirits favour him, and they have sent him the true doctrine. The precious Sanscrit is generally known in his land. The walls and palaces of his imposing cities are high and lofty, as the mountain Gandhamâdana. Religious edifices are seen everywhere; the roads are level and good, the people are numerous and delight in the security they enjoy; they dress in all kinds of clothes, just as the inmates of Heaven.

"It certainly is the first of all countries.

"The sacred emperor thinks in compassion on all living creatures, his people are happy, his loving mind is deep and broad, his laws and institutions are pure, the true doctrine is

* 婆伽達多. † 阿撒多.

brought down to the people, and the three valuables (San pau, Triratna, *i.e.* Buddha, Dharma, Sangha or Buddha, the Law and the Priesthood) are carefully promoted. His name and fame extend everywhere and fill the whole universe; the people joyously look up to him as to the rising moon; he may be compared to the ruler of the heaven of Brahmâ, men and gods all alike rely on him.

"Reverently I do homage to the blessed emperor, just as if I was standing before his face.

"I have ventured to accept the kingdom as an inheritance from my father, and now offer my most sincere wishes.

"I send an envoy to inquire after your welfare; it was my intention to come myself, but I was afraid that the storms and waves of the large ocean would make this too difficult; now I offer some trifling presents, and hope that Your Majesty will deign to accept them.'"

This country, which we do not find described anywhere else, at least not under the same name, has greatly puzzled the Chinese geographers.[1] Some have placed it in Ceylon, and the name would certainly point to this island, but then we have, in the same volume from which the above extract is taken, a description of Ceylon under its ordinary name of the Country of the Lions * (Singhala), with quite a different account of its situation, in which its vicinity to the continent of India is mentioned also.

Other Chinese geographers, amongst whom are those who have best studied the subject, agree in placing this country on the north coast of Java, but in the western part of the island, and we have many reasons to accept this view. The description suits Java very well, there is no other account of it in the history of this dynasty, though Sumatra has found a place there; and in the course of these pages we shall see that the country Lang-ga-su is sometimes used to determine the position of other islands, and that, in these cases, it is taken for Java also. Langka, Langkapura and Ngalengka, though names of Ceylon, having been transplanted to Java in the mythology of the country, might it not be possible that the Hindoo colonists had given this famous name to one of their first settlements?

No conclusion must be drawn from the fervent Buddhist spirit in which the letter is written. It cannot reasonably be doubted that such a letter was presented to the emperor by a man being, or professing to be, an envoy from the country in question, but we cannot vouchsafe the accuracy with which his credentials were translated, and it is quite possible that the envoy himself, or the people who prepared the Chinese version, put in a good deal of

[1] [May this not apply to the country known as *Kâmalankâ*, i.e., Pegu and the Delta of the Irawadi? See Beal's 'Si-yu-ki,' vol. ii., 200.]

* 獅子國.

their own, in order to propitiate the Chinese court, where Buddhism was in high favour at the time. We shall soon see more of such letters, and the above remarks may apply to all of them.[1]

Old History of the T'ang Dynasty (618—906). Book 197.

"Ka-ling* is situated on an island in the southern ocean, it lies on the eastern side of Sumatra,† on the western side of Bali;‡ towards the north it has Camboja, and on its south the sea.

"The walls of the city are made of palisadoes; there is also a large building of two stories, covered with the bark of the gomuti palm; § in this the king lives, and he sits on a couch of ivory.

"When they eat, they use no spoons or chopsticks, but put the food into their mouth with their fingers.

"They have letters, and know a little of astronomy.

"Wine is made out of the flowers of the cocoa-nut tree; the flowers of this tree are more than three feet long and as large as a man's arm, these are cut and the juice is collected and made into wine, which is sweet and intoxicating."

Of this T'ang dynasty we possess two histories; the first, quoted just now, was considered defective, and so another compilation was made from more abundant materials, and called the "New history of the T'ang Dynasty." Its account of Java gives more details than the Old history, and it will be observed that the name Java had already begun to supplant that of Kaling.

New History of the T'ang Dynasty (618—906). Book 222, Part 2.

"Ka-ling is also called Java,‖ it is situated in the southern ocean, to the east of Sumatra and to the west of Bali. At its south it has the sea, and towards the north lies Camboja.

"The people make fortifications of wood, and even the largest houses are covered with palm leaves. They have couches of ivory and mats of the outer skin of bamboo.

[1] [Ma-tuan-lin's account of *Lang-ya-sieu* has been translated by M. d'Hervey de Saint-Denys in 'Ethnographie des peuples étrangers à la Chine' (1883), p. 455, 6. In a note we find: 'Selon *Yang-ouen-hoei*, le royaume de *Lang-ya-sieou* était dans l'île d'*Ava*.']

* 訶陵.

† 婆利, Pa-li or Po-li.

‡ 墮婆登, Dva-pa-tan; this country will be treated separately, when it will be shown why it has been identified with Bali.

§ 椶櫚 Coir, the fibres found on the borassus gomuti, is still much used for thatching purposes.

‖ 社婆 or 闍婆, both representing the sound Java, Japa, or Japo.

"The land produces tortoise-shell, gold and silver, rhinoceros horns and ivory. The country is very rich; there is a cavern from which salt water bubbles up spontaneously. They make wine of the hanging flowers of the cocoa palm: when they drink of it they become rapidly drunk. They have letters and are acquainted with astronomy. In eating they do not use spoons or chopsticks.

"In this country there are poisonous girls; when one has intercourse with them, he gets painful ulcers and dies, but his body does not decay.

"The king lives in the town of Java (Japa),* but his ancestor, Ki-yen,† had lived more to the east, at the town Pa-lu-ka-si.‡ On different sides there are twenty-eight small countries, all acknowledging the supremacy of Java. There are thirty-two high officials, and the Da-tso-kan-hiung § is the first of them.

"On the mountains is the district Lang-pi-ya,|| where the king frequently goes to look at the sea.

"When at the summer-solstice a gnomon is erected of eight feet high, the shadow (at noon) falls on the south side and is two feet four inches ($2^4/_{10}$) long.

"During the period Chin-kwan (627—649) this country sent envoys to bring tribute, together with those of Dva-ha-la and Dva-pa-tan (Bali)¶. The emperor favoured them with a reply under the great seal, and as Dva-ha-la asked for good horses these were given to them.

"In 674 the people of this country took as their ruler a woman of the name Sima.** Her rule was most excellent, even things dropped on the road were not taken up. The prince of the Arabs,†† hearing of this, sent a bag with gold to be laid down

* 闍婆. Java, in Chinese as well as in other sources, is always given as the name of the country: it is only here that we find it as the name of a town.

† 吉延.

‡ 婆露伽斯. This place must remain unidentified.

§ 大坐敢兄. We are unable to guess what may have been the original word. Kern (op. cit. page 9) takes it for Datu Kanjong, which may be right, though it seems likely that these words would have been differently transcribed by the Chinese.

|| 郎畀野州, may also be translated, The wild region of Lang-pi.

¶ 墮和羅 and 墮婆登.

** 悉莫.

†† The Chinese text has 大食, Tazi, the ordinary name for Arabs in the Chinese annals. It would seem, however, that Arab settlements existed on the western coast of Sumatra at a very early date, and in consequence of this some Chinese writers confound this country with Arabia. A later author gives the history of Mohammad as having occurred in western Sumatra. The king of the Arabs, mentioned here, may have been their chief in that island only.

within her frontiers; the people who passed that road avoided it in walking, and it remained for three years. Once the heir-apparent stepped over that gold, and Sima became so incensed that she wanted to kill him. Her ministers interceded, and then Sima said: 'Your fault lies in your feet, therefore it will be sufficient to cut them off.' The ministers interceded, again and she had his toes cut off, in order to give an example to the whole nation. When the prince of Tazi heard this he became afraid and dared not attack her.

"Between the years 766—779 three envoys of Ka-ling arrived in China.

"In the year 813 they presented four negro slaves,* parrots of different colours, pînka-birds† and other things. The emperor honoured the envoy with the title of Left Defensor of the Office of the Four Inner Gates; the envoy wanted to waive this title in favour of his younger brother, for which the emperor praised him and bestowed a title on both.

"Between 827 and 835 they came again to court, bringing tribute.

"Between 860 and 873 they sent an envoy to present female musicians."

With respect to the name of Kaling, found in the two preceding extracts, we have to observe that the first Hindoo settlers in Java probably came from Kalinga, in India. Accordingly they called themselves men of Kling, and the Chinese again bestowed this appellation on their adopted country. This circumstance may be another proof for what we advanced on Chinese intercourse with the Archipelago, on page 2: the Chinese made the acquaintance of the Java-Hindoos in China, and called their country by the name of Kling, but when they began to visit this country themselves to any extent, which we think was not the case until after the first decades of this T'ang dynasty, they learned its correct name and called it Java.

We have no direct indications for fixing the situation of the towns of Java and Pelukasi, but we see that the former must have been in the interior, as the king, when he wanted to look at the sea, went to the mountains of Langpi or Langpiya. We know further that the Hindoos, during the time to which our text refers, were chiefly settled in central Java, where they ruled the country, and had already begun to build the numerous religious structures, chiefly Buddhist, which excite our admiration even in their present dilapidated state. The temple of Kalasan, or Kali

* The text has 僧祇奴, Sangchi slaves, corresponding with the Persian Zanggî, *i.e.* man from Zang (Zanguebar). This is a general name for negroes.

† 頻伽鳥; about these birds many an hypothesis is possible, but not one seems satisfactory.

Bening, on the eastern frontier of Jokyakarta, and the adjoining monumental vihâra, now called Chandi Sari, date from A.D. 779, as is attested by a Sanscrit inscription in old Nâgarî, found in the neighbourhood. This inscription, as read by Dr. J. Brandes (see "Minutes of the Batavian Society," of April, 1886), tells us that temple and vihâra were erected by a reigning prince, with the title of Mahârâja, in consequence of a vow or wager: the site is called Kâlasa, being nearly the same name as that of the present time. This temple is a perfect gem of architecture, excelling by elegance of form, rich but tasteful ornamentations, and high finish; for all these reasons it certainly was not the first built in these parts. It was dedicated to Ârya Târâ, the çakti of the Dhyâni Buddha Amoghasiddha, and must have contained numerous images, besides that of the principal deity. All the images from the interior have disappeared, but those placed outside, along the top, remain for the greater part, being the Dhyâni Buddhas Akshobhya, Ratnasambhava, Amitâbha, and Amoghasiddha, each on the proper side allotted to him. The form of Buddhism, to which this temple points, is a later Mahâyâna, which, as is abundantly proved by other ruins and remains, closely resembles what is found in Nepâl in our days.

Taking together all these indications, we may assume that our text refers to a state in the interior of central Java, in which Hindoo Buddhists were the ruling class. We do not yet know the name of this state, nor the place where its capital was situated, but it is not improbable that the latter must be sought in the neighbourhood of the above-mentioned temple, where numerous other religious structures and extensive ruins of various descriptions point to the seat of a powerful and civilized kingdom. Native tradition, though not of much value in these matters, holds the same opinion.

Langpi, or Langpiya, where the king went to look at the sea, probably rather to worship it, a custom which has held out in spite of the Islam, might then be the present Imogiri, the old burial-place of the princes of Mataram, and even now used for the same purpose by those of Surakarta and Jokyakarta. This hill, of rather difficult access, is situated to the south of Jokyakarta, about half-way between this place and the southern ocean, and commands a fine view of the latter, for which purpose it is often visited.

History of the Sung Dynasty (960—1279). Book 489.

"Java* is situated in the southern ocean. Going from the capital to the east, one comes to the sea in a month, and from

* 闍婆.

here it takes a ship half a month to go to Pulo Condore. On the west the sea is at a distance of forty-five days. On the south it is three days to the sea, and from there five days sailing to the Tazi.* On the north the distance from the capital to the sea is five days, and embarking there it takes fifteen days to go to Borneo, fifteen days more brings one to the east coast of Sumatra, seven days more to Kora.† and lastly, seven days again to Ch'ai-lih Ting,‡ which is on the way to the land of the Giau-chi (Northern-Annam) and to Canton.

"The country is flat and fit for agriculture, its products are rice, hemp and peas, there being no wheat. The tenth part of their produce they pay as taxes.

"Salt is obtained by boiling sea-water, and there is an abundance of fish, turtles, poultry, ducks, goats and cattle, which they kill for the purpose of eating.

"Their fruit are papaya, cocoa-nuts, plantains, sugar-cane and taro (Arum aquaticum).

"The country further produces gold, silver, rhinoceros-horns, ivory, lignum-aloes, sandal-wood, anise, pepper, pinang, sulphur and sapan-wood. The people are also engaged in rearing silk-worms and making silk; they weave a thin silk, a yellow silk, and cloth made of cotton.§

"They cut leaves of silver and use them as money. The functionaries superintending the trade take one *ch'ien* ($^1/_{10}$ tael, or Chinese ounce) of gold from a quantity of padi amounting to $2\frac{2}{10}$ piculs.

"Their houses are handsome and adorned with yellow and green tiles: when Chinese merchants arrive there, they are received as guests in a public building, and what they eat and drink is copious and clean.

"The country does not produce tea, but they make wine out of cocoa-nut and other palm trees, which is very fragrant and good.

"They have no corporal punishments, all transgressions are punished with a fine in gold, varying according to the nature of

* 大食, Arabs on the west coast of Sumatra, v. pag. 139.

† 古邏, the north-western part of the Malay peninsula. [It has been suggested, that this might be identified with the island of *Sangora*, on the north-*eastern* coast of the peninsula. But the greater probability is in favour of the Siamese city of *Korat*, on the high plateau between Siam and Camboja. Ma-tuan-lin (l. l., p. 578) mentions a high mountain of that name after which both kingdom and city were called.]

‡ 柴歷亭, probably an island about the entrance to the gulf of Siam.

§ 吉貝 Ki-pei, sometimes written 古貝 ku-pei; before the introduction of cotton in China they called it by this native name; comp. the Malay *kapas* or *kapeh*.

the transgression; only robbers and thieves are made to suffer death.

"The king has his hair in a knot upon the top of his head, he wears golden bells, a silk robe, and shoes of leather. He sits on a square couch, and his functionaries, who see him daily, salute him three times on going away. When he goes out he rides on an elephant or sits in a carriage; from five to seven hundred soldiers follow him. When the people see the king, they squat down until he has passed. Three sons of the king are viceroys, and there are four functionaries, called Lo-ki-lien,* who manage together the affairs of the state, just as the ministers in China; these have no fixed pay, but they get from time to time products of the soil and other things of this kind. Next, there are more than three hundred civil employés, who are considered equal to *siu-tsai* (graduates of the lowest degree) in China; they keep the books in which the revenue is put down. They have also about a thousand functionaries of lower rank, who attend to the walls and the moat of the town, the treasury, the granaries, and to the soldiers. The general of the army gets every half-year ten taels (Chinese ounces) of gold (between six and seven hundred gilders); there are thirty thousand soldiers, who, every half-year, are paid according to their rank.

"It is not the custom to use matchmakers in contracting a marriage; some gold is paid to the relations of the girl, and then she is married.

"In the fifth month they go in boats for their amusement, and in the tenth month they repair to the mountains to enjoy themselves there. They have mountain-ponies, which carry them very well, and some go in mountain-chairs.

"Their musical instruments are a transversal flute, drums and wooden boards; they can also dance.

"The people wear their hair hanging loose, their dress is wrapped round their breast and goes down below the knees.

"When they are ill they take no medicine, but only pray to the gods and to Buddha. They have proper names, but no family names. In their language pearls are called *mutiara*,† ivory they call *kara*,‡ incense *kun-tun-lu-lin*,§ and the rhinoceros *ti-mi*.‖

"In the 12th month of the year 992, their king Maraja ¶ sent an embassy consisting of a first, second and an assistant

* 落佶連. We have not been able to trace this name to its original form.

† 沒爹蝦羅.

‡ 家羅. We have been unable to trace this and two following names to their original form.

§ 崑燉盧林. ‖ 低蜜. ¶ 穆羅茶

envoy, to go to court and bring tribute. The first envoy said: 'Now that China has a rightful master again, our country comes to perform the duty of bringing tribute.' The presents sent by the king were ivory, pearls, silk embroidered with flowers and gold, silk of different colours, sandal-wood, cotton goods in various colours, tortoise-shell, betel-trays, short swords with hilts of rhinoceros-horn or gold, rattan mats plaited with figures, white parrots, and a small pavilion made of sandal-wood, adorned with all kinds of precious materials.

"After a voyage of sixty days they arrived at the district Ting-hai (island of Chusan), where the superintendent of trade first sent a messenger to inform the emperor. The envoys were dressed in a similar way as those of Persia,* who had brought tribute before. With the assistance of an interpreter the envoy said that a Chinese from Kien-khi,† who was owner of many vessels, and a great merchant, had come many times to his country, and that he now availed himself of his guidance to come to court and bring tribute. He also said that his king was called Aji Ma-ra-ya,‡ the king's concubines were Lo-kien-sa-p'o-li,§ and that in his country they had regular officials. In his language the superintendent of trading vessels was called Po-ho,|| and the wife of the king was styled Po-ho-pi-ni.¶

"In their vessel there was a woman (or, were women), whom they called Mei-chu; she wore her hair in a knot, and had no hair-pins or such ornaments. She had a garment of native cloth wrapped round her body, and was very black; nobody could understand her talk, and in saluting she prostrated herself just as the men. There was also a child, who wore a golden chain, with a lock, round his neck, and had golden bracelets on his hands, which were fastened with a string of silk. He was called A-lu.

"The envoy related that his country was in enmity with San-bo-tsai (east coast of Sumatra, Palembang), and that they were always fighting together. He also told the following story: 'In our country there are many monkeys on the mountains, and they are not afraid of men; when they are called with the sound *siau-siau*, they come forward, and if any fruit is thrown to them two large monkeys advance first; these are called by the natives the

* 波斯.

† 建溪.

‡ 夏至馬羅夜, Aji Maraja, or Maharaja.

§ 落肩娑娑利. This, and the two following names, remain unexplained.

|| 勃荷.

¶ 勃荷比尼.

kings or the chiefs of the monkeys, and it is only when they have finished eating that the others take what remains.'

"When this envoy arrived at the capital the emperor gave orders to some of his officers to treat him well; he remained some time, and when he left he was presented with large quantities of gold and silk, and also with good horses and military arms, according to what he had asked.

"The envoy related that they had as neighbour a country called Brahman,* where they had the secret of looking into people's minds; whenever anybody wanted to do them mischief they knew it beforehand.

"In the sixth month of the year 1109 they sent envoys to bring tribute; the emperor prescibed for them the same ceremonies as for those of the Giau-chi (Northern Annam).

"In the year 1129, the emperor, bestowing favours on the southern countries, gave to the ruler of Java the title of king of that country,† and appointed 2400 houses, which were in reality 1000, for his sustenance (probably for the sustenance of envoys, etc. sent by him). In 1132 this appanage was augmented with 500 houses, being in reality 200."

The writer of the above account shows that he was acquainted with the shape of the island of Java, and had a notion of the respective distances at which the neighbouring countries were situated. The grave mistakes he makes in his attempt to group them around Java say nothing against the authenticity of his narrative; we find the same inaccuracy with the Chinese of the present day: they make maps of China on which the different countries of Europe are given as small islands to the south and east, and the "Hai-kuo-t'u-chi," a work published in 1844, and containing correct maps from European sources, gives an historical map of south-eastern Asia, completely in the old style again, and on which Java, for instance, is divided into two separate islands. The Tazi or Arabs are again placed at a distance of only five days from the shores of Java; they must be those who lived on the west coast of Sumatra, not even very far north, and of whom we spoke on page 139.

* 婆羅門. Pa-ra-man. These three characters are invariably used for transcribing the word Brahman, and therefore would hardly be employed for any other name. The meaning of this passage probably is that the envoy, who came from a state where Buddhism was predominant, wanted to tell that there were in the island settlements of Brahmanical Hindoos too. The one meant here might be the centre from which the Saiva temples in Diëng, north of Pecalongan, were built. The Java Hindoos were generally addicted to Tantric rites, from which the secret power, alluded to in the text, was thought to be derived.

† The title, given in the Chinese text, is very long, and contains different honorary charges, which we have been unable to translate; it would have been necessary first to study the institutions of the Sung dynasty, which we did not think worth while to do for this purpose.

The products mentioned as coming from this country must not be taken too literally. The Chinese, as a rule, did not ascertain whether the articles which they found, or which were brought to them, really were produced by the country itself. The special mentioning of silkworms being reared by the Javanese deserves our attention however.

The story of the monkeys having a chief is true even in the present day; they are found on the shores of a small lake, called Blue Water, near Pasuruan, but in other parts of the archipelago, for instance Palembang, also.

The people are in the habit of bringing them fruit and other food, thinking that a ready acceptance on their part is a good omen. The strongest monkey, who has established his reign by brutal force, eats first, whilst the others sit around, waiting till he has finished, when they throw themselves on what remains and fight for it amongst each other.

We now come to the Mongol dynasty, called Yüan in Chinese, which reigned over China from 1280—1367, and of which the first emperor, Kublai, sent an expedition against Java. In the history of this dynasty the particulars about this expedition are not all given in the account of Java, but partly occur in the biographies of the three generals who led the Mongol troops. We will therefore successively translate these four pieces, and then try to resume briefly what they teach us about this expedition, and about the country which was the object of it.

History of the Yüan Dynasty (1280—1367). Book. 210.

"Java * is situated beyond the sea, and further away than Champa; when one embarks at Ch'üan-chou,† and goes southward, he first comes to Champa and afterwards to this country.

"The customs and products of this land are not much known, but as a rule the barbarian countries over the sea produce many rare and valuable things, which fetch a high price in China. The inhabitants are ugly and strange, their nature and speech are not understood by the Chinese.

* 爪哇. The characters 闍婆, hitherto used for expressing the name of Java, having gradually changed their pronunciation, did not suit the purpose any more, and were discarded from this time. Henceforth the Chinese write 爪哇, which must be a transcription first used by Fukien traders from the neighbourhood of Amoy or Ch'üan-chou, where these characters are pronounced *Jiau-wa*. In Chinese books the first character is often erroneously written 瓜, which makes the name Kua-wa. [See also M. d'Hervey de Saint-Denys's remarks, l. l. p. 494.]

† 泉州, a port on the coast of Fukien, formerly of much importance.

"When the emperor Shih-tsu (Kublai) pacified the barbarians of the four quarters of the world, and sent officers to the different countries over the sea, Java was the only place he had to send an army to.

"In the second month of the year 1292* the emperor issued an order to the governor of Fukien, directing him to send Shih-pi, Ike Mese, and Kau Hsing† in command of an army to subdue Java, to collect soldiers from Fukien, Kiangsi and Hukuang to the number of 20,000, to appoint a Commander of the Right Wing and one of the Left, as well as four Commanders of Ten Thousand; to send out a thousand ships, and to equip them with provisions for a year, and with forty thousand bars of silver. The emperor further gave ten tiger badges, forty golden badges, and a hundred silver badges, together with a hundred pieces of silk, embroidered with gold, for the purpose of rewarding merit.

"When Ike Mese and his associates had their last audience, the emperor said to them: 'When you arrive at Java you must clearly

* We shall presently see that the expedition started the same year and reached Java in 1293. Amiot says of this event that it took place towards 1287, evidently not having certain data, and Dr. Schlegel places it in 1309. My Chinese texts, as well as that translated by Dr. Schlegel, have the 29th year of the period Chih-yüan 至元, and any chronological table will show that this period begins in 1264. Lest those who do not know Chinese should suspect Chinese chronology of being unreliable, we feel obliged to say that the year given by Dr. Schlegel has its source in a mistake; it is true that Kublai did not actually accede to the Chinese throne before 1280, but nominally he dates his reign twenty years back, and the period Chih-yüan was instituted by him; this has been overlooked by Dr. Schlegel, who has taken those 29 years as counting from the beginning of Kublai's actual reign and so arrived at the year 1309.

† 史弼, 伊克默色 and 高興; the two former are Mongols and the latter a Chinese. The name of the second, Ike Mese, has been taken from the Mandchu transcription given in an appendix to the dynastic histories; Mr. Mayers (China Review, vol. iv. no. 3, p. 188) writes Ihamish, which is probably more correct. It must also be observed that the characters, used for expressing these Mongolian names, have been often interchanged with others conveying the same sound, we find, *e.g.*, the name of the second general also written 伊克穆蘇 and 亦黑迷失. The latter form occurs in the notes published by Dr. Schlegel on our present subject; he did not, however, recognize it as a name, but tried to translate it, and so the passage 泉府大卿亦黑迷失等將兵征爪哇 was rendered by him: "The great nobles of Ch'üan-chou blindly and disorderly went to attack Java with their troops;" whereas it should have been: "The Governor of Ch'üan-chou, Ike Mese, and his companions, led an army to subdue Java." We are obliged to notice this mistake, because it has led Dr. Schlegel to a conclusion completely at variance with our account of this expedition, which he considers not to have emanated from the government, but to have been a filibustering attack of privateers or pirates.

proclaim to the army and the people of that country, that the Imperial Government has formerly had intercourse with Java by envoys from both sides, and has been in good harmony with it, but that they have lately cut the face of the Imperial envoy, Mêng Ch'i,* and that you have come to punish them for that.'

"In the ninth month some troops were collected at Ch'ing-yüan (old name of Ningpo); Shih-po and Ike Mese went with the soldiers overland to Ch'üan-chou, whilst Kau Hsing brought the baggage with the ships. In the course of the 11th month the troops from the three provinces of Fukien, Kiangsi and Hukuang, were all assembled at Ch'üan-chou, and in the next month the expedition put to sea. In the first month of the year 1293 they arrived at the island Kô-lan† (Billiton), and there deliberated on their plan of campaign.

"In the second month Ike Mese and one of his subordinate commanders, taking with them their secretaries, and accompanied by three officers of the Office of Pacification,‡ who were charged to treat with Java and the other countries, and by a Commander of Ten Thousand, who led 500 men and 10 ships, went first in order to bring the commands of the emperor to this country. The body of the army followed to Karimon § (Karimon Java), and from here to a place on Java called Tu-ping-tsuh|| (Tuban), where Shih-pi and Kau Hsing met Ike Mese again, and determined, together with the other leaders, that half the army should be sent ashore and the other half proceed at the same time in the ships. Shih-pi went by sea to the mouth of the river Sugalu¶ (Sedayu), and from there to the small river Pa-tsieh** (Kali Mas). On the other hand Kau Hsing and Ike Mese led the rest of the troops, being cavalry and infantry, and marched from Tu-ping-tsuh overland, one of the Commanders of Ten Thousand leading the van-guard. Three superior officers were sent in fast boats from Sugalu, with the order to go first to the floating bridge of Modjopait,†† and then to rejoin the army on its way to the small river Pa-tsieh.

* 孟琪. We may observe here, that in the Chinese text of this account a number of subordinate officers are mentioned, all with their full names; as these names are of no use for our purpose, and may fatigue the reader, we will omit them as much as possible.

† 枸攔山; after translating the different accounts of this expedition, we will try to establish the identity of this and other geographical names occurring in them.

‡ 宣慰司 also written 宣撫司.

§ 吉利門.

|| 杜並足.

¶ 戎牙路.

** 八節澗.

†† 麻喏巴歇.

"The officers of the Office of Pacification soon reported that the son-in-law of the prince of Java, called Tuhan Pijaya,* wished to make his country submit, but as he could not leave his army, order was given to three officers to go and bring his prime minister, Sih-la-nan-da-ch'a-ya,† and fourteen others, who wanted to come and receive the army of the emperor.

"On the 1st day of the 3rd month the troops were assembled at the small river Pa-tsieh.

"This river has at its upper course the palace of the king of Tumapan (Tumapel),‡ and discharges itself into the sea called Pou-pên (the sea south of Madura); § it is the entrance to Java, and a place for which they were determined to fight. Accordingly the first minister of the Javanese, Hi-ning-kuan,‖ remained in a boat to see how the chances of the fight went; he was summoned repeatedly, but would not surrender.

"The commanders of the imperial army made a camp, in the form of a crescent, on the bank of the river, and left the ferry in charge of a Commander of Ten Thousand; the fleet in the river, and the cavalry and infantry on shore, then advanced together, and Hi-ning-kuan, seeing this, left his boat and fled overnight, whereupon more than one hundred large ships, with devil-heads on the stem, were captured.

"Order was now given to a strong force to guard the mouth of the river Pa-tsieh, and the body of the army then advanced.

"Messengers came from Tuhan Pijaya, saying that the king of Kalang¶ had pursued him as far as Modjopait, and asking for troops to protect him. Ike Mese, and one of his lieutenants, hastened to him, in order to encourage him, and another officer followed with a body of troops to Chang-ku,** for the purpose of assisting them. Kau Hsing advanced to Modjopait, but heard that it was not known whether the soldiers of Kalang were far or near, so he went back to the river Pa-tsieh; at last he got information from Ike Mese that the enemy would arrive that night, and was ordered to go again to Modjopait.

"On the 7th day the soldiers of Kalang arrived from three sides to attack Tuhan Pijaja, and on the 8th day, early in the morning, Ike Mese led part of the troops to engage the enemy in the southwest, but he did not meet them; Kau Hsing fought with the enemy on the south-east and killed several hundreds of

* 土罕必闍耶. † 昔刺難荅吒耶.

‡ 杜馬班. § 莆奔. ‖ 希寧官.

¶ 葛郎. ** 章孤.

them, whilst the remainder fled to the mountains. Towards the middle of the day the enemy arrived also from the south-west, Kau Hsing met them again, and towards evening they were defeated.

"On the 15th the army was divided into three bodies, in order to attack Kalang; it was agreed that on the 19th they should meet at Taha* (Daha), and commence the battle on hearing the sound of the *p'au*.† A part of the troops ascended the river, Ike Mese proceeded by the eastern road and Kau Hsing took the western, whilst Tuhan Pijaya, with his army, brought up the rear. On the 19th they arrived at Taha, where the prince of Kalang defended himself with more than a hundred thousand soldiers. The battle lasted from 6 A.M. till 2 P.M., and three times the attack was renewed, when the enemy was defeated and fled, several thousand thronged into the river and perished there, whilst more than 5000 were slain. The king retired into the inner city, which was immediately surrounded by our army, and the king summoned to surrender; in the evening the king, whose name was Haji Katang,‡ came out of the fortress and offered his submission, on this the orders of the emperor were delivered to him and he was told to go back.

"On the 2nd day of the 4th month Tuhan Pijaya was sent back to his dominions in order to make preparations for sending tribute, two officers and 200 soldiers went with him as an escort. On the 19th Tuhan Pijaya secretly left our soldiers and attacked them, by which the whole party came to grief.

"On the 24th the army went back, taking with it the children and officers of Haji Katang, altogether more than a hundred persons; they brought also a map of the country, a register of the population, and a letter in golden characters presented by the king.

"For further particulars see the account of Shih-pi."

* 荅哈.

† 礮. This character has been used by the Chinese first to denote catapults, and afterwards guns. I am not prepared to take it in the second sense, as I am not aware that the Mongols or Chinese had firearms at the time. Whatever it may have been, it must have given a sound sufficiently strong to be audible to three bodies of troops. It probably was some kind of rocket.

‡ 哈只葛當.

ACCOUNT OF SHIH-PI. HISTORY OF THE YÜAN DYNASTY. Book 162.

"Shih-pi, whose literary name was Chün-tso, and who was also called Tarhun,* was a man from Po-yeh, district Li-chou, department Pau-ting, province Chih-li."

(The historian first describes his military career, and, arriving at that part of it which may interest us, goes on as follows):

"When the emperor Shih-tsu (Kublai) wanted to subdue Java, he said to Shih-pi: 'Among my officers there are few who have my full confidence, therefore I want to entrust this affair of Java to you.' The other replied: 'If the emperor deigns to command his servant, how could he venture to be afraid for his person.'

"In the year 1292 he was made commander of the expedition to Java, whilst Ike Mese and Kau Hsing were appointed to assist him. The emperor gave him a hundred and fifty stamped badges and two hundred pieces of silk, in order to reward those who made themselves meritorious. In the 12th month he joined the other troops with 5000 men and departed from Ch'üan-chou; the wind was strong and the sea very rough, so that the ships rolled heavily and the soldiers could not eat for many days. They passed the Sea of the Seven Islands† (the Paracels Islands) and the Long Reef‡ (Macclesfield Bank), they passed the land of the Giau-chi and Champa, and in the first month of the next year they came to the Eastern Tung Islands§ (Natuna?), the Western Tung Islands|| (Anamba?), entered the Indian Sea (?)¶ and consecutively arrived at the Olive Islands (?),** Karimata†† and Kau-lan‡‡ (Billiton), where they stopped and cut timber to make small boats for entering the rivers.

"At that time Java carried on an old feud with the neighbouring country, Kalang, and the king of Java, Haji Ka-ta-na-ka-la,§§ had already been killed by the prince of Kalang, called Haji Katang. The son-in-law of the former, Tuhan Pijaya, had attacked Haji Katang, but could not overcome him; he had therefore retired to Modjopait, and when he heard that Shih-pi with his army had arrived, he sent envoys with an account of his rivers and sea-ports and a map of the country Kalang, offering his submission and asking for assistance.

"Shih-pi then advanced with all his forces, attacked the army of Kalang and routed it completely, on which Haji Katang fled back to his dominions.

* 史弼字君佐亦名塔爾琿.

† 七洲洋. ‡ 萬里石塘. § 東董山.

|| 西董山. ¶ 混沌大洋. ** 橄欖嶼.

†† 假里馬荅. ‡‡ 勾闌. §§ 哈只葛達那加剌.

"Kau Hsing now said: 'Though Java has submitted, still if it repents its decision and unites with Kalang, our army might be in a very difficult position, and we do not know what might happen.' Shih-pi therefore divided his army into three parts, himself, Kau Hsing, and Ike Mese, each leading a division, and marched to attack Kalang. When they arrived at the fortified town, Daha, more than a hundred thousand soldiers of Kalang came forward to withstand them. They fought from morning till noon, when the army of Kalang was routed and retired into the town to save itself. The Chinese army surrounded the town, and soon Haji Katang came forward to offer his submission; his wife, his children and officers were taken by the victors, who then went back.

"Tuhan Pijaya asked permission to return to his country in order to prepare a new letter of submission to the emperor, and to take the precious articles in his possession for sending them to court; Shih-pi and Ike Mese consented to this, and sent two officers with 200 men to go with him. Tuhan Pijaya killed the two officers on the way and revolted again, after which he availed himself of the circumstance that the army was returning to attack it from both sides. Shih-pi was behind, and was cut off from the rest of the army, he was obliged to fight his way for 300 *li* before he arrived at the ships; at last he embarked again, and reached Ch'üan-chou after a voyage of 68 days.

"Of his soldiers more than 3000 men had died. The emperor's officers made a list of the valuables, incenses, perfumeries, textures, etc., which he brought, and found them worth more than 500,000 taels of silver. He also brought to the emperor a letter in golden characters from the Muli (or Buli),* with golden and silver articles, rhinoceros-horns, ivory and other things. For more particulars see the articles on Kau Hsing and on Java.

"On account of his having lost so many men, the emperor ordered Shih-pi to receive seventeen lashes, and confiscated a third of his property. In the year 1295 he was raised again to office, and a memorial presented to the emperor, pointing out that Shih-pi and his associates had gone over the sea to a distance of 25,000 *li*, had led the army to countries which had never been reached in the last reigns, had captivated a king and awed into submission the neighbouring smaller countries, and that, for these reasons, mercy should be shown to him.

"The emperor then restored his goods which had been confiscated and raised him gradually to the highest ranks, until he died at the age of 86 years."

* 沒里 or 巫里, this name cannot be identified.

ACCOUNT OF KAU HSING. HISTORY OF THE YÜAN DYNASTY. Book 162.

"Kau Hsing, styled Kung-ch'i, was a man from Ts'ai-chou."*

(The author gives a pretty long description of his chiefly military career, and says at last):

"When Java had marked the face of the imperial envoy, Mêng Ch'i, the emperor appointed Kau Hsing, together with Shih-pi and Ike Mese, to take the command of an army and go to subdue this country. He also got a girdle adorned with precious stones, embroidered garments, a helmet, a bow and arrows, and a thousand *mou* of good land near a large town.

"In the beginning of the year 1293 they reached Java; Ike Mese took command of the fleet, and Kau Hsing led the infantry; at the small river Pa-tsieh they rejoined again. As the son-in-law of the late king of Java, Tuhan Pijaya, had offered his submission, they marched to attach the country Kalang and subdued its king, Haji Katang. For further particulars see the article on Shih-pi.

"They also awed into submission different smaller states, and as Haji Katan's son, Si-lah-pat-ti Sih-lah-tan-puh-hah,† had fled to the mountains, Kau Hsing went into the interior with a thousand men and brought him back a prisoner.

"When he returned at the fortified town Taha (Daha), Shih-pi and Ike Mese had already allowed Tuhan Pijaya to go back to his country, with an escort from the imperial army, in order to make preparations for sending tribute. Kau Hsing disapproved of this very much, and indeed Tuhan Pijaya killed the men sent with him and revolted again; he collected a large quantity of soldiers to attack the imperial army, but Kau Hsing and the others fought bravely with him and threw him back. After this they killed Haji Katang and his son, and returned to China.

"By an imperial decree, Shih-pi and Ike Mese, who had allowed the prince of Java to go away, were punished, but as Kau Hsing had taken no part in this decision, and moreover greatly distinguished himself, the emperor rewarded him with 50 taels of gold."

ACCOUNT OF IKE MESE. HISTORY OF THE YÜAN DYNASTY. Book 131.

"Ike Mese‡ was a man from the land of the Uigurs.

"In the year 1265 he entered the office of the night guard.

* 高興，字功起，蔡州人. Ts'ai-chou is an old name for the present district 新蔡, department 汝寧, in the province of Honan.

† 昔刺八的昔刺丹不合.

‡ 伊克穆蘇，原作亦黑迷失，輝和爾人也. This account is translated in extenso, because it shows in what way and for what purposes intercourse with foreign countries was carried on at the time.

"In the year 1272 he was sent by the emperor across the sea as an envoy to the kingdom Pa-lo-p'ei;* he came back in 1274, bringing with him people of this country, who carried precious articles and a letter of tribute. The emperor praised him and gave him a golden tiger badge.

"In the year 1275 he went again to the same country and brought back a functionary, who offered a famous medicine to the emperor; on this occasion he got again most valuable presents.

"In 1277 he became a vice-president of the Board of War.

"In 1281 he was made Resident of King-hu and Champa.†

"In 1284 he was recalled and sent again across the sea as an envoy to Ceylon,‡ in order to inspect the alms-bowl (pâtra) and other relics of Buddha; the emperor gave him a precious girdle, dresses and horse-trappings.

"In 1285 he came back from this voyage and was appointed Resident at the court of the king of Chin-nan.§ Again a precious girdle was bestowed on him. Whilst in this position he made war against Champa, together with two other generals; they were defeated and one of the generals killed. Ike Mese then told the king of Chin-nan to collect soldiers at the monastery of the High-waved Lake, in order to be able to move again. His orders were obeyed by the king, and so he succeeded in saving his army, and came back.

"In 1287 he was sent to the kingdom of Mapar|| to get the alms-bowl, and other relics of Buddha. On his voyage he had adverse winds, and it took him a year to arrive there. He succeeded in obtaining clever physicians and excellent medicines, and came back with people of the country, bringing tribute. From his own money he had bought boards of red sandal-wood, in order to make a pavilion for the emperor; these he presented also.

"Once, as he waited on the emperor in his bath-room, the emperor asked him how many times he had crossed the ocean. He answered: 'Four times.' The emperor took pity on all his hardships and gave him again a girdle, ornamented with jade, and the title of Minister of Accumulated Virtue.

"Next he was appointed governor, residing at Ch'üan-chou, and

* 八羅孛.

† 荊湖 and 占城. The first was probably a place situated in the neighbourhood of Champa.

‡ 僧迦剌. Singhala.

§ 鎮南, at that time a small semi-independent state in the present province Yün-nan.

|| 馬八爾.

in 1292 he was called to court, on which occasion he presented to the emperor all precious articles in his possession. At that time an expedition against Java was contemplated, and an army for the purpose formed in Fukien. Ike Mese, together with Shih-pi and Kau Hsing, got the command of it; the formation of the army was entrusted to Shih-pi, whilst Ike Mese had to provide for the transport over sea.

"The emperor gave them the following instructions: 'When you have arrived in Java you must send a messenger to inform me of it. If you occupy that country the other smaller states will submit from themselves, you have only to send envoys to receive their allegiance. When those countries are brought to obeyance, it will be all your work.'

"When the army arrived at Champa,* they first sent envoys to call into submission Lambri, Sumatra, Pu-lu-pu-tu, Pa-la-la† and other smaller countries, and in the beginning of 1293 they beat the country of Kalang and subdued its king, Haji Katang. Another envoy was sent to the different Malay‡ states, who all sent their sons or younger brothers as a token of their allegiance.

"The son-in-law of the prince of Java, Tuhan Pijaya, submitted at first, but when he returned to his country he revolted again, for which see the account of Shih-pi.

"The generals thought of carrying on the war, but Ike Mese wished to do as the emperor had ordered them, and first send a messenger to court. The two others could not agree to this, therefore the troops were withdrawn, and they returned with their prisoners and with the envoys of the different smaller states which had submitted.

"The emperor reprimanded Ike Mese as well as Shih-pi, because they had allowed Tuhan Pijaya to escape, and confiscated one-third of his property, but this was soon restored again.

"Not long afterwards he retired from office on account of his age, and the emperor, as a reward for his distant and difficult missions, gave him the title of Prince of Wu. He did not enjoy it long, as he died soon afterwards."

* According to the other accounts, the army did not go to Champa, but only passed it; the meaning of this passage probably is that, when the expedition was off Champa, a ship was detached from the fleet with the envoy for Sumatra, whose way lay along the coast, whilst the body of the army went on straight to Java.

† 南巫里, Lanbu-ri. 速木都刺, Suh-mu-tu-ra, the northern coast of Sumatra. 不魯不都, I do not know what country this is, the name resembles that of Borobudur, a famous Buddhist monument in the middle of Java, of which magnificent ruins remain, but it is highly improbable that this should have been meant. 八刺刺, Palala or Parara (?).

‡ 木來由, Mu-lai-yu.

Before pointing out what information may be derived from the four preceding accounts, we think it advisable to state in a few words what we know about that epoch from other sources.

In Raffles' "History of Java," vol. ii., p. 110 ss., we find the following account, drawn from a Balinese manuscript, which had been obtained a short time before Raffles wrote.

"Sri Laksi Kirana, king of Tumapel, left two sons, the elder named Sang Sri Siwabuda, and the younger Raden Wijaya. Sri Siwabuda was killed by Sri Jaya Katong, king of Kediri, who conquered the country and compelled Wijaya to fly. The latter afterwards collected a number of adherents around him, founded the new town of Majapahit, and soon was so strong that he thought of attacking Kediri. Some time before this the king of Tatar had been to Kediri, and Jaya Katong had promised him his daughter in marriage; as he delayed fulfilling this promise the king of Tatar became angry, and hearing that Wijaya was going to attack Kediri, he proposed to join him. Wijaya accepted the proposal; the king of Tatar came with his army, and Jaya Katong was killed by him in battle with his own hand. After this the Tatar king went back to his country, and Wijaya reigned at Majapahit, extending his sway over the whole island."

The same tradition, and probably from the same source, is mentioned by Friederich.*

The traditions current in Java are rather at variance with these details. Tumapel is not mentioned, and the ruling country in the eastern part of the island is called Jenggolo. The names of the different persons disagree also, and the only point of similarity is that Jenggolo is said to have been destroyed by the chief of the Kalangs, who is however called Boko.†

In utilising these various accounts, it must be remembered that the Chinese version is a sober narrative of facts, disfigured, it is true, by many errors and inaccuracies, but free from all fiction. The Balinese account has been handed down through many generations, gradually losing in accuracy, and becoming mixed with much of the fantastic and marvellous; whilst Javanese tradition has been violently interrupted by the introduction of the Islam, and, having been raked up from its embers at a later period, hardly seems to deserve any credit at all.

Returning now to our translations, we find that the Mongol prince, Kublai, having rendered himself master of China, at once adopted the Chinese tradition of universal dominion, and accordingly sent envoys all over the world, as far as he was aware of

* Voorloopig verslag van het eiland Bali, door R. Friederich, p. 21. In Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen. Deel xxii. [Journal of the R. Asiatic Society, N.S., vol. viii. p. 186.]

† Hageman. Geschiedenis enz. van Java. Deel i. p. 14.

its existence, informing the various princes that a new family had ascended the throne of the world, and asking them to renew their allegiance.

The prince of Tumapel, in the eastern part of the island of Java, whose country was called Java, par excellence, by the Chinese, because it was in this part of the island they chiefly traded,* seems not to have recognised these claims; he cut or tattooed the face of the imperial envoy, and sent him away in this ignominious state. It is not stated in what year this happened, but we have seen already that Kublai, though dating his reign back to 1260, did not become undisputed master of China before 1280, and as moreover he was not a man to brook an insult long, we may assume that this envoy's visit to Java occurred not many years before 1292, when this expedition was sent to revenge the outrage.[1]

The fleet sailed from Ch'üan-chou, in Fukien, and did not follow the accustomed course along the coasts of Malacca and Sumatra, but kept further off, boldly taking the shortest road to its destination. For this reason the islands they passed on the middle of their course are not mentioned anywhere else, and we have not been able to identify these with absolute certainty, but the fact of their coming near Karimata shows sufficiently what must have been their course. They next came to an island which they call Kô-lan, or Kau-lan, where they went ashore to repair their vessels, and also made some smaller craft for entering the rivers: we cannot again identify this name, but as it was situated between Karimata and Karimon-Java, we may safely say that it was Billiton.

During this delay the political agents, who accompanied the

* The name of Tumapel, however, is mentioned by the Chinese also. On p. 149 it is said that the palace of the king of Tumapel (Tumapan) was situated on the upper course of the Surabaya river. We should say this was not quite correct, as the Mongol army ascended this river as far as Daha in Kediri, but does not seem to have found it on their way. Instead of *on* we have probably to read *near*, and this royal residence may have been situated on the site of the present village of Tumapel, on the upper course of the Tangi river.

[1] [In Howorth's 'History of the Mongols,' vol. i. 250, the following account of the occurrence, from Gaubil and de Mailla, is given: "Khubilai's envoy, a Chinese mandarin called Mengki, returned home with his face branded; the punishment there awarded to highwaymen. Khubilai was furious, ordered a great fleet to rendezvous in the parts of Fu-kien, under the command of a general and admiral who had been in the Indian seas, and knew the language of Java. This armament consisted of 1000 ships of all kinds, 30,000 soldiers, besides sailors, etc., and provisions for a year. It set out in January, 1293, and coasted along the shores of Cochin China. Having entered the Great Ocean, they came to the mountains (? islands) Kanlan, Yukia, Liniata, and Kesulang. There they landed to cut timber for making transports. The King of Java (called Kuava by the Mongols) pretended to submit, and persuaded the Chinese commander to attack Kolang, a neighbouring kingdom with which he was at war. The King of Kolang was defeated in a battle which lasted from sunrise to mid-day, and in which his forces numbered 100,000. He submitted, but was put to death with his family."]

army, went first to Java, to see what could be done by negociations, and the army soon followed, going first to the island Karimon-Java, and next to a place on Java's coast, which is called Tu-ping-tsuh.

The latter name looks throughly un-Javanese, and as it occurs only once in the narrative, it may be that the Chinese characters used for its transcription have become corrupted. Later Chinese geographers ,and Chinese tradition in Java, all agree in identifying it with Tuban, in Rembang, on the north coast of Java.

At this place, Tuban, half the army was sent ashore with orders to march to the mouth of the river Pa-tsieh, whilst the other half proceeded in the fleet towards the same destination, passing on its way the river Segalu (Sugalu), which must be the same as is now called Sedayu. Pa-tsieh is the river of Surabaya, at present called Brantas or Kali-Mas, which is proved beyond any doubt by Changku, or Changkô (afterwards an important place for Chinese trade, will be treated separately, q. v.), being situated on it, whilst it led also to the neighbourhood of Modjopait, and to Daha in Kediri. The Chinese text gives this river as Pa-tsieh kan,* *i.e.* the small river Pa-tsieh, and this name we find back in the village Pachekan of the present day, situated on its right bank, about nine miles from the sea. It is probable that formerly this village gave its name to the Surabaya branch of the Brantas.

The two divisions of the Mongol-Chinese army rejoined at the mouth of this river on the 1st day of the 3rd month (between half April and half May), but in the meantime information had been obtained that the king of Tumapel, or Java, who had come to punish the expedition had been killed by his neighbour Aji Katang (or Katong),† king of the Katang (or Katong) people, who reigned at Daha in the present Kediri. The territory of Tumapel had been conquered by Aji Katang, only the son-in-law of the late king, Raden Vijaya,‡ was still in arms against the invader, and defended himself at Modjopait,§ which place he had founded as a basis for his resistance.

* 八節澗.

† The Chinese text has Aji (or Haji) Katang (or Katong), whilst the Balinese account gives Sri Jaya Katong. Of course this Aji does not mean here a Mahommedan, who has made the pilgrimage to Mecca, but it was a title very common amongst the Hindoos in Java.

‡ The Chinese text has Tuhan Vijaya. This Tuhan is generally considered to be an Arab appellation, introduced together with the Islam and not used by the pagan princes in Java. If this view is correct, its use here is an anachronism, which may be explained, however, by the most probable assumption that the expedition was accompanied by Arabs from Canton, who served as interpreters and bestowed this appellation on Raden Vijaya. It is also possible that Arab merchants were already established on the coast of the island, and that they, too, designed him by this name.

§ Modjopait must therefore have been founded between the visit of the Mongol envoy Mêng Ch'i, say 1280 (but probably later), and the arrival of the expedition in 1293.

This Raden Vijaya offered his submission to the Mongol generals, and sent some trusty followers, who gave the necessary information about the roads, rivers and resources of the country. Aji Katang was master of the delta of Surabaya also, and the Mongols found there an army which tried to oppose them, and which were either troops of Kalang or other Javanese who had submitted to them. The Mongol generals therefore gladly accepted the assistance of Raden Vijaya, and soon fought their first battle at the mouth of the river Pa-tsieh, where the Kalang troops were easily routed.

These troops, which seem to have been under command, not of Aji Katang himself, but of one of his ministers, retired into the interior, and seem to have joined the army of Aji Katang before Modjopait. Raden Vijaya at least sent word that he was sorely pressed by his foe, and asked for assistance. The Mongol army accordingly marched in that direction, and a strong body of troops was sent ahead, to keep up the spirits of their ally. On the 8th day of the 3rd month a battle was fought under the walls of Modjopait; the Kalang army was defeated, and thrown back into the mountains south of that place.

Not satisfied with this success, the victors now marched on Daha, the capital of Aji Katang, which was attacked and captured on the 19th day of the same month; the king was made a prisoner, and seems to have been ultimately killed.

All resistance being now at an end, it became Raden Vijaya's turn to pay for the services which the Mongol army had rendered him; as, however, his opponent was dead, and the force of his country broken, he did not require these services any more, and sought to avoid his obligations. He therefore pretended that he had to go back to his capital in order to prepare adequate presents for the emperor, and was allowed to depart for this purpose, escorted by a few Chinese troops. On his way he threw off the mask, the Chinese escort was treacherously massacred, and he at once began hostilities against his former allies. By this time the Mongol generals had found out how difficult it was to carry on war in these parts; they did not think it advisable to begin a new struggle, and, taking with them the more important prisoners from Daha, and whatever treasure they could collect, they returned to their ships and left the island after a stay of about four months.

The preceding notices only relate to eastern Java, and do not even mention the central part of the island, which we saw predominant during the T'ang dynasty (*v.* pp. 138 ff.). As we observed above, this may be owing to the fact that Chinese trade was chiefly carried on in the eastern part of the island, for reasons which we have been unable to ascertain, but which may have been the greater security of the roadsteads there, perhaps also a more

settled state of affairs. It must not be understood, however, that the Hindoo kingdom of central Java, mentioned on page 140, had disappeared altogether. It might have lost some of its power, but certainly continued to exist, and in our extracts from the books of the Ming dynasty we shall presently see that it is mentioned again as a separate state in the fourteenth century.

History of the Ming Dynasty (1368—1643). Book 324.

"Java* is situated at the south-west of Champa. In the time of the emperor Kublai, of the Yüan dynasty (1260—1249), Mêng Ch'i was sent there as an envoy, and had his face cut, on which Kublai sent a large army which subdued the country and then came back.

"In the year 1369 the emperor T'ai-tsu sent an envoy to this country, to communicate his accession to the throne; at that time an envoy from this country, who had brought tribute to the house of Yüan, was in the province of Fukien, on his voyage back, when the house of Yüan fell; he therefore returned to the capital of the new dynasty, where the emperor appointed an envoy to escort him back to his native country, and presented him with an almanac.

"In the year 1370 the emperor issued an edict, informing the world that he had subjugated Sha-moh † (the country of the Yüan), and of the following contents: 'In all past times the ruler of the world had his attention fixed on all who live in it, he continually watched over them, the far and the near were equal to his mind, and it was his constant wish that all mankind should enjoy tranquillity and happiness. Now, for this purpose, it is necessary that China should be in a state of tranquillity first, and then the countries outside can rely on it. Of late the prince of the house of Yüan was wanton, libidinous, stupid, and weak, his mind was not bent on the people, and the brave men in the empire took away pieces on the frontier. I felt pity that the people was thus trodden upon, I raised an army of patriotic soldiers and made an end to that state of disorder, and the soldiers and the people of the empire honoured me with the throne; the name of the universal empire is the Great Ming, and the name of my reign is Hung-wu. Two years ago I took the capital of the Yüan: the whole country is settled now, and Champa, Annam, Corea, and other countries have already brought tribute. This year I sent a general to subdue the north, and only then I learnt that the prince of the house of Yüan had died; his grandson was brought a prisoner, and I bestowed upon him the

* 爪哇. † 沙漠.

title of an earl. Following the example of the emperor and kings of former dynasties in organizing the world, it is my only wish that the people, in and out of China, should enjoy tranquility, and as the different foreigners (*fan*, barbaroi) live in far distant countries and do not yet know all these events, I now send envoys to inform them of it.'

"In the 9th month of the same year (1370) the king Sri-pah-ta-la-pô* sent envoys with a letter written on a sheet of gold, and products of the country as tribute. The envoys were treated according to the prescribed forms.

"In the year 1372, when the imperial envoy, Ch'ang K'o-ching,† came back to China, the king of this country sent an envoy with tribute along with him, bringing back three imperial decrees which they had received from the Yüan dynasty.

"In the year 1375 they sent tribute again.

"In the year 1377 the king Pa-ta-na-pa-na-bu‡ sent envoys with tribute to the imperial court.

"In this country there is a western king and an eastern king, the latter is called Bogindo Bong-kit and the former Bu-la-po-bu;§ both of them sent envoys with tribute, but as their politeness was not sincere, the emperor ordered them to be detained, and it was only after some time that they were allowed to return.

"In the year 1379 the king Pa-ta-na-pa-na-bu sent envoys with tribute, and so he did in the following year. Some time before imperial envoys had been sent to carry a seal to the king of eastern

* 昔里八達刺蒲, the first four characters may be read Çrîpâda see pag. 135, note †.

† 常克敬.

‡ 八達那巴那務.

§ 勿院勞網結 and 勿勞波務. The eastern kingdom must have been Modjopait, of which we know that it had risen to considerable power about this time, and even exercised a more or less direct supremacy, nominally over the whole, virtually over a part of Java and different Hindoo settlements or kingdoms in other islands. As the Chinese, about this time, chiefly traded in the neighbourhood of the present Surabaya, they must have known Modjopait well, this town being quite near. We can be less positive about the western kingdom; it may have been Pajajaran, a native state of that time quite to the west, of which we do not know much more than that its capital stood in the vicinity of the present Buitenzorg, south of Batavia, and that its territory lay in the Priangan districts. As, however, the Chinese sources we comment on here, seem to contain chiefly evidence collected in the eastern part of the island, it looks more probable that this western kingdom must not be sought quite so far away, and was rather a native state in the central part of the island, strong enough to cope successfully with Modjopait in 1406, as is told on our next page.

Sumatra (San-bo-tsai)* and those of Java deluded and killed them; the emperor was highly incensed, and detained their envoys more than a month, with the intention to punish them, but ultimately they were sent back with a letter to their king, in which he was reproved for what he had done.

"In the year 1381 they sent envoys, who brought as tribute 300 black slaves and products of the country. The next year they brought again black slaves, men and women, to the number of a hundred, eight large pearls and 75,000 catties of pepper.

"In the year 1393 they sent tribute, and the next year again.

"When the emperor Ch'êng-tsu ascended the throne, he sent information of it to this country, and the next year, 1403, he sent a vice-envoy and a messenger to present the king with silks and gauzes embroidered with gold. When the envoys had left, the western king, Tu-ma-pan,† sent envoys to congratulate the emperor, who again sent an eunuch and others to bestow upon the king a silver seal inlaid with gold. The king sent envoys to present his thanks for this seal, and offered products of his country as tribute.

"The eastern king, Put-ling-ta-hah,‡ also sent envoys to court for the purpose of bringing tribute and asking for a seal, and the emperor sent an officer to bring it to him. From this time the two kings brought tribute.

"In the year 1405 the eunuch Chêng Ho§ was sent as a messenger to this country, and in the next year the two kings made war upon each other; the eastern king was defeated and

* 三佛齊. The reason why those of Java killed the imperial envoys, was that San-bo-tsai had been conquered by Java about 1377, whilst shortly before the son of the last king had sent envoys to China, soliciting the imperial investiture. A seal was brought by Chinese envoys when the Javanese were already in the country, and these, thinking that the Chinese wanted to contest their newly-acquired rights, killed the ambassadors. Compare account of San-bo-tsai.

† 都馬板. Amiot, and after him, Schlegel (vide the latter's translation, Appendix pp. viii. and ix.), say that Tumapan was the title of the western king or that of Pajajaran, without giving any authority for their assertion. Tumapan seems indeed to have been a title, or at least a name of frequent occurrence (see page 165); on page 149 it is given as the name of a kingdom on the upper part of the Surabaya river. This looks as if Tumapan (Tumapel) or the kingdom of the western king Tumapan, must be placed not at all far away from Modjopait; at all events, also on account of what we advanced on the preceding page, we do not think that Pajajaran can have been meant.

‡ 孛令達哈, also P'i-ling-da-ha.

§ 鄭和.

his kingdom destroyed.* At that time the imperial envoys were just in the country of the eastern king, and when the soldiers of the western king entered the market-place 170 of their followers were killed by these; on this the western king became afraid, and sent envoys to ask pardon. The emperor gave them an edict, reproving him severely, and ordered him to pay sixty thousand thails of gold as a fine. In the 1408 Chêng Ho was sent again to this country, and the western king presented ten thousand thails of gold; the officers of the Board of Rites observed that the amount was not complete, and wanted to imprison the envoys who brought it, but the emperor said: 'What I want from those people who live far away, is that they acknowledge their guilt, but I do not not want to enrich myself with their gold,' and on this he remitted the whole fine. From this time they brought tribute continually, sometimes once in two years and sometimes more than once a year, and the eunuchs Wu Pin† and Chêng Ho visited their country repeatedly.

"At that time Palembang‡ was under the domination of Java, and the king of Malacca falsely pretended that he had an order from the emperor to claim this possession. When the emperor heard this, he gave an edict, saying: 'When lately the eunuch Wu Pin came back, he reported that you (king of Java) had treated the imperial envoys in the most respectful way; now I have heard lately that the king of Malacca has claimed the country Palembang from you, and that you have been very much astonished, fearing that this was my will; but I treat people in the most upright way, and if I had allowed him to do so, I certainly would have sent an open order, therefore you have no reason to be afraid, and if bad men make use of false pretences, you must not lightly believe them.'

"In the year 1415 the king adopted the name Yang Wi-si-sa,§ and sent envoys to thank the emperor for his kindness, and to bring as tribute products of the land.

* We have seen on the preceding page that the eastern kingdom must have been Modjopait, and therefore our narrative is at variance with native tradition, which tells us that Modjopait was destroyed in 1478 by a league of native chieftains, recently converted to the Islam and headed by the prince of Demak in Samarang. I am not able to determine how far native tradition is right here, but as our Chinese sources are reliable as regards dates and principal facts, though they may greatly err in details, we must take it as history that Modjopait was overcome by the western kingdom in 1406; it may be, however, that Modjopait was not destroyed on this occasion, and recovered itself afterwards.

† 吳賓.

‡ 舊港, Ku-kang, or the Old River, by which name the Chinese call it up to the present day.

§ 揚惟西沙.

"About that time some followers of the imperial envoys had been driven by a storm to the country Pantsur,* and a Javanese, hearing this, paid a ransom for them, and brought them to the place where the king lived. In the year 1418 the king sent envoys with tribute to the court, and sent these men back at the same time; the emperor praised the king in an edict, and sent also presents to the Javanese who had rescued them.

"In the year 1436 the imperial envoy, Ma Yung-lang, presented a memorial to the emperor, saying that the former Javanese envoy, Pa-ti,† on coming to court, had got a silver girdle, and as the present envoy, A-liet,‡ was a man of the fourth rank, he requested a golden girdle for him; his request was granted.

"In the intercalary sixth month of the same year the envoys of Calicut, Northern Sumatra, Cochin, Arabia, Cail, Aden, Hormus, Dsahffar, Comari and Camboja,§ were sent back, together with the envoys of Java, and the emperor gave a letter to the king of this country of the following contents: 'You, oh king! have never been remiss in performing the duty of sending tribute in the time of my ancestors, and now that I have come to the throne you have again sent envoys to court; I am fully convinced of your sincerity. Now, in the reign of my predecessor (1426—1435), Calicut and ten other countries have come to bring tribute, and as your envoys are going home I have ordered those other envoys to go with them. I expect you will treat them kindly and send them back to their respective countries, in order to carry out my benevolent intentions towards those who live far away.'

"In the year 1440 envoys who were going home were shipwrecked by a storm, fifty-six men were drowned and eighty-three saved; they came back to Canton, and the emperor gave orders to the authorities to provide for them until there should be a ship in which they could go home.

"In the year 1443 the Governor of Canton presented a memorial, pointing out that the continual tribute of Java caused great expenses and trouble, and that it was no good plan to injure China in order to benefit those distant people. The emperor adopted his views,

* 班卒兒, probably Fansur or Fantsur, mentioned by Marco Polo, on the west coast of Sumatra. [See "'Ajâib el Hind," ed. Van der Lith & Devic, pt. ii. p. 233 ff.]

† 八諦.

‡ 亞烈.

§ 古理 Ku-li, 蘇門答剌 Su-men-ta-ra, 柯枝 Ko-chi, 天方 T'ien-fang, 加異勒 Ka-i-lih, 阿丹 A-tan, 忽魯謨斯 Wu-lu-moh-su, 祖法兒 Tsu-fa-r, 甘巴里 Kam-pa-li and 眞臘 Chin-lah; most of these names are identified after Dr. E. Bretschneider, "On the Knowledge possessed by the ancient Chinese of the Arabs and Arabian Colonies" (London, Trübner, 1871); and some after Mr. Phillips' notice in Doolittle's "Handbook," &c., vol. ii. p. 555.

and when the envoys of that country went back he gave them a letter, saying: 'The different countries over the sea shall all bring tribute once in three years; you, oh king, must also have compassion with your people and observe this arrangement.'

"In the year 1446 they brought again tribute, but afterwards they became gradually more remiss.

"In the year 1452 the king Prabu* sent envoys to court with tribute.

"In the year 1460 the king Tu-ma-pan (Tumapel?)† sent envoys to carry tribute. When these envoys went back, and had arrived at An-ch'ing,‡ they got drunk and had a fight with foreign priests who came to bring tribute, and of whom six were killed. The Board of Rites asked that the Chinese functionaries who escorted the envoys should be punished, but that the latter should be sent to their king with the order to punish them himself. This was approved by the emperor.

"In the year 1465 tribute was brought from Java.

"In the year 1499 envoys with tribute were shipwrecked in a storm, and only the ship of their interpreter arrived at Canton. The Board of Rites requested that the authorities there should be ordered to entertain them and send them back to their country with presents, the articles of their tribute being forwarded to the capital. The emperor granted the request, and after this their envoys arrived very rarely.

"The country in question is situated near Champa, from where one can go there in twenty days. When the army of the Yüan dynasty went to attack it, they left Ch'üan-chou in the 12th month of the year 1292, and arrived at this country in the first month of the next year, so that the distance is only one month.

"When they brought tribute in the year 1432, they presented a letter stating that their kingdom had been founded 1376 years before, that is in the first year of the period Yüan-k'ang of the emperor Hsüan of the Han dynasty (B.C. 65).§

* 巴刺武, Pa-la-bu.

† 都馬班. Compare note † on page 162.

‡ 安慶府, in the province of An-hwui.

§ There is a discrepancy here which we are unable to explain. The letter was presented, and probably written in 1432, and from there counting back 1376 years, we arrive at the year 56 of our era, whilst the Chinese writer calculates back to 65 B.C. It is possible that the number of years, given in the letter, has been wrongly handed down by the Chinese, and was originally 1497, in which case it would agree with the Chinese calculation, but it may also be that the latter is wrong, though I do not see how such a glaring mistake could be made. However it may be, we do not feel justified in deciding the question, and from this interesting passage we only conclude that the Javanese dated the foundation of their country, i.e. the first settlement of the Hindoos, back to about the beginning of our era.

"The country is large and the people are numerous; their temper is cruel and hasty; young and old, high and low, all carry a sword at their side, and on the slightest provocation they injure each other, therefore their soldiers are the best of all barbarian countries.

"Their letters resemble those of the country Soli,* they have no paper or pencils, but cut them on kajang leaves.† The weather is always like summer, and rice is cut twice a year. Tables, couches, spoons or chopsticks are not used by them.

"There are three kinds of people: firstly, the Chinese, who reside here temporarily, and whose clothes and food are fine and nice; secondly, the traders from other countries, who reside here for a longer time, and who are also pretty civilised and clean; and thirdly, the natives of the country, who are very dirty, and are fond of eating snakes, ants, insects and worms, and who sleep and eat together with the dogs.

"Their skin is very black, they have hands like monkeys, and go with their feet bare. They believe much in ghosts. When one has killed a man he conceals himself for three days, and is then free of guilt. When their parents die they carry them to the forest and allow them to be eaten by the dogs; if they are not devoured completely they are very sorry. The remains are burned, and often the wife and the concubines are burned also, to accompany the dead.

"The country is sometimes called Pekalongan and also Ha-kang and Sunda.‡

"During the period Wan-li (1573—1620) the red-haired barbarians (Dutch and English) established a toko at the east of the great river,§ and the Franks (Portuguese) another on its western bank, where they traded every year; Chinese traders also visit the place continually.

* 字類瑣里. Soli was the name of a country in India [most probably the Chola kingdom, see Beal's "Si-yü-ki," vol. ii. 249, and Yule's "Marco Polo," vol. ii. 272]; in an account of Siam we read that a man from Soli was first minister there. Our translation agrees with that of Amiot, and Dr. Schlegel's version; *their letters are small and tiny*, is obviously wrong. The words themselves of the Chinese text would not bear this translation: 類 means *to resemble*, not *to be*, and 瑣里 does not mean *small* or *minute*, but has no meaning at all.

† 茭蔁. Kajang is a general name for different palm-leaves, used for roofing and other purposes. The writer means the leaves of the Borrassus flabelliformis, called *lontar* in Java.

‡ 莆家龍. 下港, Ha-kang, "the lower river," is the Chinese name of that time for Bantam, 順達.

§ 大澗, the "great river," is a designation used for the river of Bantam. We shall presently be able to give a separate notice of this place from other sources, q. v.

"In this country there is a place called Sin-ts'un (Grissé),* which has the reputation of being very rich; the ships of Chinese and barbarian merchants all collect there, and it is full of valuable merchandise. The chief of this village is a man from Canton, who, in the year 1411, himself sent envoys to court with a letter, and offered products of the country as tribute."

We shall not attempt to compare the above account with what is found in other sources: for this purpose we have nothing else than native tradition, of which the real value has not yet been satisfactorily fixed. Our translation is therefore given without further comment, and we only hope that the native sources for the ancient history of Java may soon be more closely investigated, when we trust that the Chinese narrative, especially by its chronological data, will prove of some use.

We see further that the relations between China and Java, especially in the beginning of this dynasty, were rather intimate, envoys from both sides continually coming and going; amongst the Chinese envoys the name of Chêng Ho is frequently mentioned, this man acquired such a reputation by his travels to foreign countries, that the historians of the dynasty have given him a place amongst the biographies of celebrated persons; and as this article contains much valuable information about the way and manner in which the intercourse with foreign countries was carried on, we think it desirable to give a translation of it.

ACCOUNT OF CHENG HO.† HISTORY OF THE MING DYNASTY. Book 304.

"Chêng Ho was a man from Yün-nan, and is the same who is commonly called the eunuch San-pan.‡ At first he served in the palace of the Prince of Yen (afterwards emperor under the name Ch'êng-tsu), and having acquired military merit, he was gradually raised to the rank of first eunuch.

"When the emperor Ch'êng-tsu (1403—1424) feared that Hwui-ti (his predecessor, whom he had driven from the throne) was concealing himself in some country over the sea, he wanted to trace him and at the same time to display his military force in foreign countries, in order to show that China was rich and strong.

"In the 6th month of the year 1405 he ordered Chêng Ho, his companion Wang Ching-hung,§ and others, to go as envoys to

* 新村, the new village will be treated separately, q. v.

† 鄭和.

‡ 三保, amongst the Fukien Chinese, Sam-po.

§ 王景弘.

the western ocean. They took with them 27,000 soldiers, a large quantity of gold and silks, and made sixty-two large ships, 440 feet long and 180 feet broad.* They sailed from Su-chou† to Fukien, and from there they went first to Champa, and next to the various barbarian countries, making known the orders from the emperor. They made presents to the princes and chiefs, and those who would not submit were compelled by force.

"In the year 1407, the 9th month, Chêng Ho and his companions returned, and envoys of the different countries followed them to the court. He presented also to the emperor the chief of Ku-kang (Palembang), whom he had taken prisoner. The emperor was much satisfied, and promoted and rewarded them in different ways. Ku-kang is the old San-bo-tsai; the chief of this country, Ch'en Tsu-i,‡ had been carrying on piracy, and when Chêng Ho sent messengers with the orders from the emperor he feigned to submit, but secretly made a plan to rob Chêng Ho also; he was defeated, taken prisoner, brought before the emperor, and decapitated in the market-place at the capital.

"In the 9th month of the year 1408 he went again to Ceylon, where the king, A-liet-k'u-nai-r, § enticed him into the interior of his country and then wanted to extort gold and silks from him, whilst he sent soldiers to attack his fleet; when Chêng Ho saw that the troops of this robber were gone, few being left in the neighbourhood, he attacked him at once with the two thousand men he had with him and captured his palace, whereupon the

* These improbable dimensions are thus given in our text, and we cannot help translating them. It seems, however, that the Chinese Government at that time used very large ships for its embassies to foreign countries, and we are able to give a more detailed description of one, from the "Hai Yü," a book published in 1537:

"In the year 1486 the emperor sent two envoys to Champa in order to perform the ceremony of investiture. These officers equipped a large ship for the purpose. When a large ship makes a voyage, it has a smaller vessel, with several tens of picked men who know the way on sea, and this vessel, called the *pilot*, goes before the larger one.

"Behind the large vessel two boats are fastened, to be used for the purpose of getting firewood and water, and to serve in case of emergency; these are called *fast horses*, or *boats with feet.*

"The soldiers and other people going with these envoys numbered about a thousand; what with men and what with goods the ship was overloaded, and as the captain was not well acquainted with the sea, the ship struck upon a rock on the coast of Annam; it broke up and the two envoys were drowned, which same fate was shared by ninety per cent of their suite. There was on board a man from my village, who managed to save himself with about seventy others in one of the smaller boats, in which they rowed to the shore, which was very near."

† 蘇州, capital of the present province of Chiang-su.

‡ 陳祖義, chief of the Chinese in Palembang, q. v.

§ 亞烈苦奈兒.

king was made a prisoner, together with his wife, his children and his ministers. As soon as those who had gone to attack the ships heard of this, they hastened back in order to rescue their king, but Chêng Ho's army completely defeated them. In the 6th month of the year 1411 he brought the king a prisoner to the capital, but the emperor did not decapitate him, but gave him permission to return to his country.

"At the same time the land of the Giau-chi (Northern Cochin-China) was subdued and made a Chinese province; on account of this the different countries were still more afraid, and the number of envoys became daily greater.

"In the 11th month of the year 1412 Chêng Ho and his companions were again ordered to go as envoys to Sumatra (the northern part of the island), where they found that a pretended son of the king had killed that prince and put himself on the throne; being angry that he got no share of Chêng Ho's presents, he collected soldiers and attacked the Chinese army, but he was beaten and pursued as far as Lambri,* where he was taken prisoner with his wife and children. In the 7th month of the year 1415 he came back to the court; the emperor was much pleased, and rewarded the generals and soldiers according to their rank.

"In the winter of the year 1416 Malacca, Calicut and seventeen other countries, sent envoys to court to carry tribute; when they left Chêng Ho was ordered to go with them in order to bring presents to their princes and chiefs. In the 7th month of the year 1419 he came back.

"In the spring of the year 1421 he went again, and came back the next year, in the 8th month.

"In the 1st month of the year 1424, the Chief of Kukang (Palembang), called Shih Chi-sun,† requested to succeed his father as Imperial Agent; ‡ Chêng Ho went to bring him a seal and a commission, and when he came back the emperor Ch'êng-tsu had died.

"In the 2nd month of the year 1425 the emperor Jên-tsung ordered Chêng Ho to be Guardian of Nanking, with the troops which had subdued the south; the office of Guardian of Nanking dates from this time.

"In the 6th month of the year 1430 the emperor considered that he had been on the throne so long now, while those of the barbarians, who lived some distance away, had not yet appeared

* 喃渤利.

† 施濟孫, see under Palembang.

‡ 宣慰使, lit. envoy (agent abroad) of the office for general pacification (of the foreign countries). We have seen functionaries of this office in Java during the Yüan dynasty (v. pag. 148) and it seems that this title was now given by the Chinese Government to the headmen of the Chinese abroad.

at court and brought tribute; upon this Chêng Ho and Wang Ching-hung again received orders to go to Hormus and sixteen other countries. From this voyage they came safely back.

"Chêng Ho had now served three emperors; he had been sent as envoy seven times, and had visited Champa, Java, Camboja, Kukang, Siam, Calicut, Malakka, Brunei, Sumatra, Aru, Cochin, Great Coilan, Little Coilan, Soli and Western Soli, Cail, A-po-pa-tan, Comari, Ceylon, Lambri, Pahang, Kalantan, Hormus, Pi-la, the Maldive islands, Sun-la (Sunda?), Magadoxu, Ma-lin-la-sah, Dsaffar, Sa-li-van-ni, Jubo (Jeba), Bengal, Arabia, Li-tai and Nakur,* altogether more than thirty different countries. He brought back numberless valuable things, but what China had spent on them was not little either.

"When he came back from his last voyage in the period Hsüan-tê (1426—1435), the people from those remote countries still came continually, but not in such numbers as in the time of the period Yung-lo (1403—1412). Chêng Ho was now old, and died soon afterwards.

"Whenever, after his death, anybody went as an envoy to the southern seas, he took great care to speak of Chêng Ho, in order to impress the barbarians, and therefore it was said that the voyage of the eunuch San-pau to the western seas was the greatest event in the beginning of the Ming dynasty.†

"In the time of the emperor Ch'êng-tsu (period Yung-lo, 1403—1424) much care was given to the intercourse with the various foreign countries, and the envoys sent to them were mostly eunuchs; Chêng Ho and Wang Ching-hung were chiefly employed as envoys to the western seas, whilst to the other countries other men were sent."

We are sorry to say that the memorials which this remarkable traveller is sure to have presented to the emperor after his different voyages have never been published, and there is very little chance

* 占城, 爪哇, 眞臘, 舊港, 暹羅, 古里, 滿剌加, 渤泥, 蘇門答剌, 阿魯, 柯枝, 大葛蘭, 小葛蘭, 瑣里, 西洋瑣里, 加異勒, 阿撥把丹, 甘把里, 錫蘭山, 喃渤利, 彭亨, 急蘭丹, 忽魯謨斯, 比剌, 溜山, 孫剌, 木骨都束, 麻林剌撒, 祖法兒, 沙里灣泥, 竹步, 榜葛剌, 天方, 黎代 and 那孤兒. Those countries which do not fall within the limits of our task have been chiefly identified after Dr. E. Bretschneider and Mr. Phillips (see above, p. 164).

† The name of San-pau, or Sam-po, is still living amongst the Chinese in Java, who call him Ong Sam-po 王三保, mistaking his family name for that of his companion, whilst he has become quite a legendary personage with them.

of their having survived the fall of the Ming dynasty, so that we must give them up as lost for ever. This loss is somewhat compensated for, however, by the care of two Chinese Mahomedan priests, Ma Huan and Fei Hsin, who, knowing the Arab language, accompanied Chêng Ho as interpreters, and each wrote an account of the countries they visited, respectively under the title of "Ying-yai Shêng-lan, or General Account of the Shores of the Ocean," and "Hsing-ch'a Shêng-lan, or General Account of Peregrinations on Sea." These two interesting little books have been noticed at greater length in our introduction, and as the plan and the details of both works are almost identical, we shall only translate that account which is most complete, and add from the other as much as may seem desirable.

YING-YAI SHÊNG-LAN (1416).

"The country of Java * was formerly called Ja-pa; † it has four towns, all without walls. Ships from other countries going there first arrive at a place called Tuban, ‡ next at a place called Ts'e-ts'un, § then at Surabaya, ‖ and lastly at a place called Modjopait, ¶ where the king lives.

"The residence of the king has a brick wall more than thirty feet high and more than a hundred feet long, it has a double gate and is clean and well kept. The houses inside stand high from the ground and are thirty to forty feet high; they have a floor of boards, covered with fine rattan-mats or rush-mats with patterns, on which the people sit cross-legged; for the roofs they have taken boards of hard wood, which is split and used as tiles.

"The dwellings of the people are covered with straw, and in every house they make a store-room of masonry, three or four feet high, for stowing away their goods, and they always sit on the top of this.

"The king goes bareheaded, or wears a cap with golden leaves and flowers; he wears no garment on the upper part of his body, but around the lower part he has one or two flowered cloths

* 爪哇, Jiau-wa and

† 闍婆, Japa are not different names, but the first is the Fukien transcription, and the second that of the ancient Chinese, which did not answer any more in modern times, when the sound of the Chinese characters had been somewhat modified.

‡ 杜板.

§ 厠村 the Chinese name for Grissé, q. v.

‖ 蘇盧馬益.

¶ 滿者伯夷. Moa-tsia-pa-i. All these names will be noticed more fully in the course of this account.

(sarong), and he uses a piece of flowered silk-gauze or linen to fasten these around his loins, for which reason the latter is called loin-wrapper (slendang). He carries one or two short daggers called *bĕladau*,* and always goes barefooted. He rides on an elephant or sits in a cart drawn by oxen.

"The men in this country have their long hair hanging down, and the women wear it in a knot; they use a kind of coat, and a wrapper round the lower part of the body. The men have a *bĕladau* stuck in their girdle, everybody carrying such a weapon, from the child of three years up to the oldest man; these daggers have very thin stripes and whitish flowers, and are made of the very best steel; the handle is of gold, rhinoceros-horn or ivory, cut into the shape of human or devils' faces, and finished very carefully.

"The men and women of this country take great care of their heads; if another touches it, or if they get into a quarrel in trading, or if they are drunk and insult each other, they draw their daggers and begin stabbing, thus deciding the question by violence. If one is killed, the other runs away and conceals himself for three days, after which time he has no more to account for his opponent's life. When, on the contrary, a murderer is caught on the spot, he is also stabbed to death immediately.

"They do not know the punishment of flogging with whip or bamboo; for great and small offences the hands of the culprit are bound on his back with a thin rattan, and, being led away a few paces, he is stabbed with the dagger in his side or between his ribs once or twice, until he dies; not one day passes without a man being killed, which is very frightful.

"Chinese copper coins of different dynasties are current here.

"Tuban† is the native name of a place with somewhat more than a thousand families, all under one chief; amongst these are many Chinese from Canton and Chang-chou,‡ who have settled there. Fowls, goats, fish and vegetables are very cheap here.

"On the seashore is a small pond with fresh, potable water, which is called the Holy water. It is said that in the time of the Yüân dynasty the imperial generals Shih-pi and Kau Hsing

* 不刺頭. The first two characters are also written 鈀鑞 *pa-lak*. The word *bĕladau* is not now, and probably was not then, used by the Javanese for this dagger, but it occurs in other native languages of the archipelago; it may therefore have been learnt by the Chinese from these, or was probably used in the *lingua franca*, which must have been spoken with and by the foreign traders in the larger emporiums. The interpretation of Mr. Mayers, who reads the second character 刺 *tz'e*, and explains the name by "do not strike at the head," will have to be given up.

† 杜板 or 賭班.

‡ 漳州, province of Fukien, neighbourhood of Amoy.

having come to attack Java, were a month without obtaining any advantage; the water on board the ships was exhausted and the army was in a precarious state; the two generals then prayed to heaven, saying: 'We have received the imperial command to subdue the barbarians, if heaven is with us may a well spring up, and if not, let there be no water.' Having finished this prayer they thrust their spears with force into the seashore, and immediately water sprang up from the place where the spears had struck; the water was good for drinking, all drank of it and were saved by this assistance from heaven. The well exists up to the present day.

"Going eastward from Tuban for about half-a-day, one comes to Ts'e-ts'un, of which the native name is Gersik (Grissé).* Originally this place was a barren seashore, but the Chinese who came to this country established themselves there; at the present day the rich people are Cantonese; there are about a thousand families, and the natives come in large numbers from all places to trade here; all kinds of golden articles, precious stones and foreign goods are sold here in large quantities, and the people are very rich.

"Going southwards from these two villages, a distance of about seven miles,† one comes to Surabaya, where many rich people are also found. Here are again about a thousand families, with Chinese amongst them.

"At the mouth of the river is an island covered with luxuriant vegetation, where a large number of long-tailed monkeys live. A black old male is the chief of them, and an old native woman is always at his side. When the women in this country are without children, they prepare wine, rice, fruit, cakes, etc., and go to invoke the old monkey; when this old monkey is favourably disposed, he eats something of what is put before him, and then lets the other monkeys fight for the rest. When all has been eaten, two of the monkeys come forward and copulate, after which the woman goes home and forthwith becomes pregnant. If her offerings are refused, she never has any children. This thing is very curious.‡

"Going from Surabaya in a small boat, to a distance of 70 or 80

* 厕村, native name 革兒昔 Kĕ-r-sih. The former name is Chinese, meaning the Dung-village.

† Twenty *li;* the distances between Tuban, Grissé and Surabaya, are decidedly underrated.

‡ About the origin of these monkeys, the Hsing-ch'a Shêng-lan has the following legend: "It is told that in the time of the Tang dynasty (618—906) there was a family of more than 500 souls, of which men and women were equally bad. Once a Buddhist priest came to their house, and, having incantated them, he took water in his mouth and spurted it over them, when they were all changed into monkeys. Only one old woman was not transformed, and remains until now at the place of her former abode. The natives and traders always prepare rice, areca-nuts, fruit and other eatables as offerings to them; when they fail to do this, they are sure to meet with bad luck."

li (about 25 miles), one comes to a market-place called Chang-ku;* going ashore here and walking southward for a day and a-half, one comes to Modjopait,† where the residence of the king is. In this place there are about 200 or 300 native families, and seven or eight chiefs, who assist the king.

"The climate is always warm as our summer, and the rice ripens twice a year; its grain is small and white. They have also sesamum and yellow beans, but barley and wheat are not found. The country produces sapan-wood, diamonds, white sandal-wood, nutmeg, long pepper, steel and tortoise-shell, prepared and unprepared. Of strange birds there are parrots as large as a fowl, others which are red, green, or of different colours, and the beo (Gracula religiosa), ‡ all of which can imitate human speech. We find further, cockatoos, green and coloured pigeons, peacocks and other birds.§

"Curious animals are the white stag and the white monkey.

"They rear pigs, goats, cows, horses, fowls, and ducks, but have no donkeys or geese.

"The fruits are plantains, cocoa-nuts, sugar-cane, pomegranates, capsules of lotus, mangostine, water-melons, langsap (Lansium domesticum), etc.

"The mangostine is somewhat like a pomegranate, with a skin like that of the small orange, and four pieces of white flesh inside; the taste is sweet and acid, very pleasant.

"The langsap is like the pi-pa (Eriobotrya Japonica), but a little larger, with three pieces of white flesh inside; its taste is also sweet and acid.

"The sugar-cane has a white bark, and is very thick; it grows to a length of twenty or thirty feet. There are further, melons, egg-plants (Solanum melongena) and other vegetables, but they have no peaches, plums, or leek.

"The people of this country sleep sitting, not having beds or couches, and when eating they do not use spoons or chopsticks.

"Men and women continually chew penang with betel and lime; when they are going to eat, they first rinse their mouth in order to clean away the remnants of the penang, wash their

* 章姑, Chang-kô, according to the Fukien pronunciation, and written 章孤 in the account of the Yüan dynasty (v. above pag. 149). It is the transcription of a native name, and may have been the present Changkir, on the left bank of the river, near the top of the delta.

† 滿者百夷, Moa-tsia-pah-i, a transcription by Chinese from Fukien.

‡ 鷯哥 liau-ko. This, or rather 烏鷯哥 the black liau-ko, is still the Chinese name for this bird. [O. Mohnike, "Pflanzen- und Thier-leben," p. 442, gives a description of the *beo* or Eulabes Javanus.]

§ It must be observed, once for all, that the Chinese call products of a country whatever they find there, without ascertaining from where it has come.

hands and then sit down. They take a full bowl of rice, over which they pour cream or some other sauce, and put it into their mouth with their fingers. When they are thirsty they drink water.

"When receiving guests they do not offer them tea, but only treat them with penang.

"In this country there are three kinds of people: first, the Mahomedans,* who have come from the west, and have established themselves here; their dress and food is clean and proper. Second, the Chinese, being all people from Canton, Chang-chou, and Ch'üan-chou (the latter two places situated in Fukien, not far from Amoy), who have run away and settled here; what they eat and use is also very fine, and many of them have adopted the Mahomedan religion and observe its precepts. The third kind are the natives, who are very ugly and uncouth; they go about with uncombed heads and naked feet, and believe devoutly in devils, theirs being one of the countries called devil-countries in Buddhist books. The food of these people is very dirty and bad, as for instance snakes, ants and all other kinds of insects, and worms, which are kept a moment before the fire and then eaten; the dogs they have in their houses eat and sleep together with them, without their being at all disgusted.

"It is said that in olden times a king of devils (Mârarâja), with a green face, a red body and brown hair, who lived in this country, united himself with a bad spirit in the shape of an elephant, and begot more than a hundred children, who lived on human flesh and blood, and devoured a large number of people. One day a peal of thunder came unawares and cleft a rock, inside of which a man was seen sitting; the people were much astonished at this and took him for their king, on which he led them against the ghostly elephant and drove it away with its offspring; the scourge was thus done away with and the people multiplied again in peace, but on this account they like fighting until now.

"Every year they have a 'meeting of bamboo spears.' The 10th month is the beginning of their spring (of the rainy monsoon), when the king makes his wife ride in a pagoda-carriage before him, himself following in an ordinary cart. This pagoda-carriage is more than ten feet high, with windows on all sides, underneath is a revolving axle, and it is drawn by horses. At the place of the meeting ranks are formed on both sides, every man holding a bamboo spear without an iron point, but nevertheless very hard and pointed; every one of the combatants has his wife or concubine with him, armed with a stick three feet long, and standing between them. At a signal on the drum, which beats quick or slow, two men advance with their lances and commence fighting; they engage three times, and then their wives separate

* 回回. Arabs.

them with their sticks, saying 'na-rah! na-rah!' (or 'la-rah! la-rah!'),* on which they separate. If one is killed in the fight the king orders the victor to pay one golden coin to the relations of the deceased, whose wife henceforth follows the victor. Thus they make a game of a deadly fight.

"When a man marries, he goes first to the house of the bride to conclude the marriage, and three days afterwards he brings his wife home, on which occasion the relations of the bridegroom beat copper drums and gongs, blow on cocoanut-shells, beat drums made of bamboo, and burn fireworks,† whilst a number of men armed with small swords surround them. The bride has her hair hanging loose, the upper part of her body and her feet naked, round her waist a piece of green flowered cloth is fastened,

* 那 剌; probably the Javanese word *larak*, "to draw, to pull, to draw back," and this exclamation would then mean, "pull them back! pull them back!" Dr. Schlegel (v. Notes, p. 17) says this game was called Na-tsse-ki by the Chinese, and in other respects also his account differs from ours, all which is due to the fact that he has not quite caught the meaning of his Chinese original, which is indeed a most slovenly composition and hard to understand, unless, as in our case, one is assisted by a more complete description from other sources. As Dr. Schlegel has given us the Chinese text which he translated, it will be easy to prove what we advanced just now. The incriminated passage runs as follows: 登場者亦偕妻至妻亦操三尺捧相格曰那刺格己傷斃者王遣勝者出金鈔一筩償之以孀婦勝者卽己, which he translates: "Those who appear in the arena are also accompanied by their wives, and these wives are likewise armed with a stick, three feet long, with which they attack each other. This is called Na-tsse-ki. With regard to those who are wounded to death, the king causes the victor to pay as indemnity one bamboo measure of gold, but if one has been overcome by a widow (the payment of the indemity) is not exacted." We take 格 as *to separate*; for 刺 tz'e (tsse) we read 剌 lah, the former being seldom or never used for the purpose of transcription, whilst the latter is used hundreds of times for expressing the sounds *lah* and *rah*; 曰 means in the first place *to say*; the second 格 must be joined to the following sentence; 婦 means *a wife*, but also, as here, *to give as wife to*. After these observations we translate as follows: "Those who appear in the arena are also accompanied by their wives, and these wives are likewise armed with a stick, three feet long, with which they separate (their husbands), saying *larah*. When, after their being separated (格 己), it is found that a man is wounded to death, the king causes the victor to pay as indemnity one bamboo measure of gold, and the widow is given as wife to the victor, by which the matter is arranged." The expression 金 鈔 一 筩, which we have allowed to pass as "one measure of gold," because no other translation is possible, is no doubt an error in the Chinese text; our author has 金 錢 一 箇 one golden coin, which seems more probable.

This game, called Senênan, still exists in eastern Java, though in a somewhat modified and mitigated form.

† The Chinese text has 放 火 銃, which now means *to fire guns*, but for that time we think our translation preferable.

on her head she wears strings of golden beads, and on the wrists bracelets of gold and silver, nicely ornamented.

"The relations, friends, and neighbours, bring penang and betel, whilst with garlands of flowers and leaves they adorn a little ship, which they carry along with the newly-married as a form of congratulation. Arriving at the house they beat drums and gongs and rejoice for several days, after which they go away.

"Their burial-rites are as follows:—When a father or mother are about to die the sons and daughters ask them first whether, after their death, they prefer to be eaten by dogs, to be burnt, or to be thrown into the water. The parents give their orders according to their wishes, and after their death their directions are carried out. If it is their wish to be eaten by dogs, the body is carried to the seashore or into the wilderness, where a number of dogs soon arrive; if the flesh of the corpse is eaten completely, it is considered propitious, but if not, the sons and daughters lament and weep, and throw the remains into the water.

"When rich people, chiefs, or men of rank die, their favourite concubines swear, before their master's death, that in case he dies they will go with him. On the day the corpse is taken out of the house, a high wooden scaffolding is erected, at the foot of which wood is piled up in a large heap, and when the fire burns fiercely two or three of his concubines, who have sworn before, their heads covered with flowers and their bodies covered with pieces of cloth of various colours, mount on the scaffolding and, weeping, dance a long time, after which they jump down into the fire and are burnt together with the corpse of their lord.

"Among the natives are many rich people.

"In their trading transactions the Chinese copper cash of different dynasties are current. They have letters which are similar to those of Soli, but they use no paper or pencils, and write by tracing on kajang-leaves with a pointed knife. They have rules of grammar, and the language of this country is very fine and soft.

"Their weights are as follows: a cati (*kin*) has twenty taels (*liang*), a tael sixteen *ch'ien* and a *ch'ien* four kobangs; a kobang is equal to 2.1875 *fen*, Chinese official weight, the *ch'ien* is 8.75 *fen*, their tael is 1.4 Chinese taels, and their cati has 28 Chinese taels, all in official weight of China.*

* We have not been able to ascertain the official weights and measures of the dynasty during which the above article was written, but we have been told by a very reliable native scholar, that the present dynasty has made no change in this respect. Taking, therefore, the Institutions of the present dynasty (Ta-Ch'ing Hwui-tien), as our guide, we arrive at about the following values:

a Javanese cati = 1.12 kilogram; a Javanese tael = 0.056 kilogram.
a " ch'ien = 0.0035 id. a kobang = 0.000875 id.

For *cati*, *tael* and *chien*, the author gives the Chinese names. Ko-bang is written 姑邦.

"Their measures of capacity are as follows:—a joint of a bamboo is cut off and made into a measure, which is called kulak, and is equal to 1.8 *shêng* or pint, official measure. Their *tou*, or peck, is called nai-li, and is equal to 1.44 *tou*, official measure.*

"On every fifteenth and sixteenth day of the month, when the moon is full and the night is clear, the native women form themselves into troops of 20 or 30, one woman being the head of them all, and so they go arm in arm to walk in the moonshine; the headwoman sings one line of a native song, and the others afterwards fall in together; they go to the houses of their relations and of rich and high people, where they are rewarded with copper cash and such things. This is called 'making music in the moonshine.'

"There is a sort of men who paint, on paper, men, birds, animals, insects and so on; the paper is like a scroll, and is fixed between two wooden rollers three feet high; at one side these rollers are level with the paper, whilst they protrude at the other side. The man squats down on the ground and places the picture before him, unrolling one part after the other, and turning it towards the spectators, whilst in the native language, and in a loud voice, he gives an explanation of every part; the spectators sit around him and listen, laughing or crying, according to what he tells them.

"The people of this country are fond of Chinese porcelain with green flowers, musk, flowered and plain linen, or silk, glass beads etc.; they buy these articles with copper cash.

"The king continually sends chiefs and ships to China for the purpose of bringing, as tribute, products of the country."

The history of the Ming dynasty has brought us down to the time of the Europeans, where our task is at an end. We will only add a few notices about the chief trading-ports of Java, taken from the Tung Hsi Yang K'au, "Researches on the Eastern

* 姑剌 ku-lak and 捺黎 nai-li; using the same source for our calculations, we find that a *kulak* is about equal to 1.86 litres, and the *nai-li* to 14.91 litres. The word *kulak* is still now used for a measure answering the description above; the *naili* has become obsolete, at least in the archipelago, but was well known not very long ago. In G. K. Niemann's "Bloemlezing uit Maleische geschriften," p. 58 (edition of 1870), we find the following note, "Nalih, a measure of 16 gantangs, is probably the Tamil *nali*, a coin measure of 8 *marcals;*" and in Milburn, "Oriental Commerce," vol. ii. page 328, "1 nelly = 16 bamboos = 32 quarters, used in Acheen." The same work (page 11) gives for the *marcal* a value of 750 cubic inches, being about 1.23 litres, which is considerably less than our *kulak*, though also the eighth part of a *nali*. This does not necessarily point to an error in one of the two statements, as it is well known that weights and measures of the same name differ considerably in various localities. M. Horace Doursther, in his "Dictionnaire universel des Poids et Mesures, anciens et modernes" (Bruxelles, M. Hayer, 1840), mentions the *marcal* as a measure used in different places of India, varying from 4 to 14 litres, and speaks of the *nali* as a weight, "*Hali* or *nali*, poids en usage à Quéda, côte occidentale de Malacca = 14.51 kilogrammes.'

and Western Ocean," which work, though published as late as 1618, contains much information anterior to that period, and which may well find a place here.

SUKITAN.

TUNG HSI YANG K'AU (1618). Book 4.

"Sukitan * is commonly, but wrongly, called Sukit-kang ; † it is a dependency of Java, and has many different settlements, of which Grissé ‡ is the chief place. At Grissé there is a king, who is more than a hundred years old, and can predict future events. § It is situated in the interior, || and the merchant-vessels only pass by without anchoring there because the current is very rapid. The people of this country go to Yortan ¶ in order to trade with the Chinese.

"The anchorage of the Chinese ships is at Yortan, which is a flat country with a fortress built of stones. When the chief of this place goes out, he rides in a carriage drawn by four or eight horses, or by oxen,** and is accompanied by more than a hundred attendants with arms and insignia of his dignity. When the natives see their king they conceal themselves, only the women fold their hands and squat down at the side of the road ; for the rest their customs are similar to those of Ha-kang (Bantam).

"The neighbouring countries are Surabaya and Tuban. †† In Tuban there are many robbers, and therefore the Chinese will not live there. They have there the second son of the king, whose body weighed some hundreds of caties, when he was only about

* 蘇吉丹. This name has not been handed down by Javanese tradition.

† 蘇吉港.

‡ 吉力石 Ki-li-sik. Grissé is a European corruption of the native name Gersik.

§ Probably the Susuhunan or Sunan of Grissé, which dignity was filled by Arabs and their descendants, who were first religious teachers and soon acquired considerable spiritual and temporal power. Many of them enjoyed the reputation of particular holiness.

|| Grissé has always been situated near the sea; the word "interior" here can only mean that it was not accessible to sea-going vessels.

¶ 饒洞 Yau-tong, or Jiau-tong; in former times a trading port at the southern arm of the Brantas, the same river of which the northern arm flows past Surabaya, near the present Bangil in the residency Pasuruan.

** The Chinese text has 黃牛 yellow oxen, which means cows or oxen, not buffaloes.

†† 猪蠻 Tu-ban, according to the Amoy pronunciation ; the same which is elsewhere written 杜板.

ten years old; he was once stolen by robbers, but they could not lift him, and now he has been made a Datu. *

"Behind Yortan are the mountains Kim-hô,† which are covered with bamboo forests, and where the melati ‡ grows without cultivation. The inhabitants all go naked, and only wear a piece of paper to cover the lower part of their body; they plant beans for food, and the able-bodied amongst them are good hunters, chasing bucks, deer, apes and monkeys, which they eat after slightly roasting them; when thirsty they drink the blood, to which they take wine made from a tree. They never come down from their mountains."

On the next page of the same work we find the following geographical indications:

"The White Island § is a name for the mouth of the river Yortan.

"Bangil || is situated more than 10 *li* (3 miles) beyond Yortan.

On the Trade.

"Grissé is subject to Java, but rules over Yortan, Surabaya and other countries. Amongst the different nations which bring their goods to Ha-kang (Bantam) this country is always found. When our vessels arrive in these parts the different dependent places all come to Yortan to trade with the Chinese, and though it is an out of the way place it still is very prosperous. Formerly the transactions were made on board the ships, but lately the number of traders having increased, they have gradually made shops on shore."

Looking back for a moment on the different accounts of Java, which the Ming dynasty has transmitted to us, we see, in the first place, that in the beginning of the 15th century the Chinese envoys who visited this island only went to the eastern part, and there found three trading ports: Tuban, on the northern coast Ts'e-ts'un, a Chinese settlement at or near Grissé, and Surabaya. At all these places Chinese were established and traded. The

* 那督.

† 金後山; probably not a transcription of the native name, but rather a Chinese denomination, which would mean "the golden mountains of the interior." These mountains must be those called Tengger, of which the inhabitants differ from the other Javanese even now, and have, for instance, resisted the introduction of the Islam amongst them.

‡ 茉莉花.

§ 白嶼, the island formed by the river of Yortan, near its mouth; Yortan being situated further inland.

|| 望加黎 Bang-ka-li.

capital of the country was at Modjopait, and was reached by going up the Surabaya river, as far as Changko (Changkir) and further overland.

Afterwards, as we see from the Tung Hsi Yang K'au, it seems that Tuban has been left by the Chinese on account of its insecurity, or, as they say, because there were many robbers. Ts'e-ts'un, the Chinese name of Grissé, is changed into Sin-ts'un, the New Village, but it seems that the place became of more difficult access, and Chinese ships were obliged to pass it. Surabaya is just mentioned, but was not of any importance either, and all the trade went to a new place called Yortan, situated in the present district Pasuruan, and which has since disappeared again. * Modjopait has vanished also, having been destroyed in the wars which accompanied the introduction of the Islam, and the eastern coast of the island is called Sukitan, which country had its capital at Grissé, and was subject to the prince of Java (Demak). This must have been the state of things about the arrival of the Europeans, or not long afterwards.

The Chinese envoys of the beginning of the 15th century only visited the eastern part of Java, probably because the western side was not engaged in foreign trade, and therefore had no relations with China. This seems not to have lasted long however, as the Tung Hsi Yang K'au speaks of Ha-kang † (Bantam) as a thriving place, and towards the end of the dynasty Pekalongan is mentioned also. The name Bantam is not found, the country in which Ha-kang was situated being called Sunda.

No description of this part of the country is given, but the Tung Hsi Yang K'au has the following account of the way in which trade was carried on there.

TUNG HSI YANG K'AU (1618). Book 3.

Trade at Ha-kang in Java.

"When a Chinese ship arrives here a chief comes on board to take informations. The captain gives him a basket with oranges and two small umbrellas. The chief writes at once to inform the king, and on entering the river, fruits and pieces of silk are sent as presents to this prince. The king has four Chinese and two native writers to keep his books, and Chinese who know the foreign language act as interpreters—one man for every ship. For

* The site of Yortan has been a subject of much discussion, some have sought it near Grissé, whilst others say that it must have been the present Bangil; the details given in our translation show that it was situated about three miles to the north of the latter place, on the southern branch of the Surabaya river.

† 下港, the Lower River or Port, is a Chinese and not the native name.

trading purposes the king has assigned two places outside the town, where the shops are made; in the morning everybody goes to the market-place to trade, and at noon all is stopped. The king levies daily market-duties.

"The red-haired barbarians (Dutch or English) have come to Hakang and have established a magazine on the eastern side of the great river; the Franks (Portuguese) have done the same on the western side; and these foreigners arrive every year. In trading they use silver money, but the natives use leaden coins; 1000 of these form a string,* and ten strings make a bundle;† one bundle of leaden coins is said to be equivalent to one string of silver money.

"Ha-kang is a centre of general intercourse; our ships arrive there before the merchants of other countries, and then the goods are sold for silver or leaden money; when, afterwards, the goods from other countries arrive, these are bought with the money received before. This is done because Chinese ships go there at different times of the year, and so have to wait for the merchants of other countries."

Of the different countries to the east of Java very little mention is made, and it would seem that the Chinese were not in the habit of extending their trading expeditions so far. The little we have found is given below.

TIONG-KA-LO.

HSING-CH'A SHÊNG-LAN (1436).

"Tiong-ka-lo‡ borders on Java; it has high mountains covered with verdure, and in one of these there is a cavern, with three entrances in front and at the back, which can contain as many as 20,000 men.

"The products of agriculture are about the same as in Java. The weather is always warm, and the manners and customs are pure.

"Men and women have their hair in a knot; they wear a long dress of cotton and a striped sarong.

"They have no chiefs, but obey those who are old and virtuous. They boil salt out of sea-water, and make wine of fermented glutinous rice.

"Articles of export are antelopes, parrots, cotton, cocoa-nuts,

* 貫.　　† 包.

‡ 重迦羅. Our transcription is given after the Amoy pronunciation, but as the last character is generally used for the sound *ra*, it should probably be Tiong-ka-ra; the Mandarin pronunciation of the time was Chung-kia-lo. We think the island of Madura is meant, but we must acknowledge that the description affords little intrinsic evidence for our supposition.

and cotton-gauze. Articles of import are silver and flowered silk.

"Across the sea, at a distance of several days' journey, are the countries called Sun-to-lo (Sun-da-ra), Pi-pa-tho (or Pi-pa-da), Tan-tiong (Tanjong?), Oan-kiau and Bali.* The inhabitants of all these islands do not cultivate the land, but only live from rapine, therefore merchant-ships seldom go there."

BALI.

The following account is applied by Chinese geographers to the island of Bali, and we have no reason to disagree with them; it is true that there is not much internal evidence for their opinion, but they were often able to base such statements on uninterrupted tradition, which must not be too lightly set aside. The account is found in the

Old History of the T'ang Dynasty (618—906). Book 197.

"The country of Dva-pa-tan† is situated to the south of Camboja, at a distance of two months, going by sea. It lies at the east of Kaling (Java)‡ and the west of Mi-li-kü,§ on its north it has the sea.

"Its customs are about the same as those in Kaling. Rice ripens once a month. They have letters which they write on patra-leaves.||

"When one of them dies they fill his mouth with gold, put golden bracelets on his legs and arms, and, after having added camphor-oil, camphor-baros, and other kinds of perfumery, they pile up firewood and burn the corpse.

"In the year 647 their king sent envoys to bring as tribute cotton-cloth, elephant-tusks, and white-sandal. The emperor gave them an imperial letter and rewarded them with different presents."

* 孫陀羅· 琵琶拖· 丹重· 圓喬· 彭里· I am quite unable to identify these countries, except perhaps the last; it is true that the character 彭 is generally pronounced *p'ang* or *p'êng*, but at Amoy it is sometimes *p'a*ⁿ or *p'e*ⁿ, and by the author of this account, as well as by others, it is used simply for *pa* in Pahang 彭坑, a place on the eastern coast of Malacca. Later Chinese geographers also say that this name designates Bali.

† 墮婆登. ‡ 訶陵. § 迷黎車.

|| 具多葉. *Pa-ta* stands for the Sanscrit *patra*, leaves. They are the leaves of the Borassus flabelliformis or Lontarus domestica.

After this we find nothing more about Bali, which can only be explained by assuming that this island, not yet, or but scantily, settled by the Hindoos, offered little inducement to trade, and was therefore not visited by the Chinese.

It would seem, however, that their isolation was not quite complete, and that the island was visited by Chinese envoys in the beginning of the fifteenth century, when China kept up an official intercourse with foreign countries with remarkable energy. In the "History of the Ming Dynasty," book 324, we find the following notice about two places, which we are inclined to think were in the island of Bali.

"Tieh-li * lies near Java. In the year 1405 the emperor sent there an envoy, who came back with a messenger from the king, bringing tribute. This country adheres to the doctrines of Buddha, its customs are pure, there are few litigations, and its products are not many.

"Ji-la-ha-ti † is situated near Java. In the year 1405 the emperor sent there an envoy, who brought back an envoy from its king with tribute. The country is small, and the people are acquainted with agriculture. There are no robbers, and they believe also in the tenets of Buddha. Its only productions are sapan-wood and pepper."

We feel inclined to apply these two passages to places on the island of Bali, on account of the situation assigned to them.

It must, however, be acknowledged that it remains very uncertain whether the above accounts really speak of Madura and Bali.

SUMATRA.

Of this island the ancient Chinese have only known the northern and the eastern coast, on each of which they found an emporium for their trade, which gave its name to the whole country; though these names have changed in the course of time, they all apply on the northern coast to the present Acheen, and on the eastern side to Palembang, or if not exactly to these places, at least to their immediate neighbourhood. For a long time the Chinese, as other early travellers, were not aware that these two places were situated on the same island, they speak of them as quite separate countries, and we will, accordingly, treat them in the same way.

* 碟里 Tieh-li or Tih-li (Deli ?)

† 日羅夏治, also Jih-ra-ha-chi.

EASTERN COAST OF SUMATRA.

KAN-DA-LI.

HISTORY OF THE LIANG DYNASTY (502—556). Book 54.

"The country of Kandali* is situated on an island in the southern sea; its customs and manners are about the same as those of Cambodja and Siam. It produces flowered cloth, cotton† and areca-nuts, these last being of excellent quality and better than those of any other country.

"In the reign of the emperor Hsiau-wu of the Sung dynasty (454—464), the king of this country, Sa-pa-la-na-lin-da,‡ sent a high official of the name of Ta-ru-da,§ to present valuable articles of gold and silver.

"In the year 502, the king Gu-dha-su-po-da-la‖ dreamt on the 8th day of the 4th month that he saw a Buddhist priest, who said to him: 'China has now a holy ruler, and after ten years more the law of Buddha will greatly increase; if you send messengers to carry tribute, and show your reverence, your country will be prosperous and happy, and the foreign merchants will visit it in numbers increased a hundredfold. If you do not believe what I say, your country will not enjoy peace.' The king, at first, could not believe this, but some time afterwards he again saw the priest in a dream, saying to him: 'As you do not believe me, I must bring you there and make you see the emperor.' He then went to China in his dream and had an audience from the emperor. When he awoke he was greatly astonished, and as he was a

* 干陁利, may also be read Kandari or Kandori. We cannot identify this name, which soon disappears again, but the Chinese, who may know these things by uninterrupted tradition, all agree in saying this is the Palembang of modern times. [This view is confirmed by P. A. van der Lith in the Notes to his edition of the "Kitâb 'Ajâib el Hind," p. 249. See also M. d' Hervey de St. Denys, l. l., p. 452]. In Valentijn's "Oud en Nieuw Oost-Indien" it is said that Sumatra was formerly called Andalus. There is a place called Kendari on the eastern coast of Celebes at Vosmaer-bay, but even if it already bore this name, it is quite improbable that a Hindoo settlement has ever existed there. Dr Kern (see page 12 of his essay quoted on page 135) thinks that Kandali means Pulu Condore, near Saigon, but his assumption is untenable for various reasons: (1) this island was already known to the Chinese under the name of K'un-lun; (2) the native name is Kon-non, and Condore a foreign corruption, thus the Chinese could never have transcribed it with Kandali; (3) this small rocky island can never have been the seat of anything like a Hindoo kingdom. Without being unduly positive, I prefer to follow my Chinese sources here.

† 吉貝 ki-pa, sometimes, perhaps erroneously, written 古貝 ku-pa, is the transcription of the native word for cotton, which is now in Malay *kapas* or *kapeh*. At that time the Chinese themselves had no cotton. [See p. 142, note §.]

‡ 釋婆羅那憐陁. Nalinda is probably a transcription of the Sanscrit Narendra (king). See Kern, op. cit. pag. 12.

§ 竺留陁. ‖ 瞿曇脩跋陁羅.

skilful painter, he made a picture of the emperor's face as he had seen it in his dream, adorning it with various colours. He then sent an envoy, accompanied by a painter, to carry a letter to the emperor and present precious stones and other things. When the envoys had arrived, they made a picture of the emperor, which they took home to their country, and, comparing it with the original drawing, it was found to be exactly the same. The king now mounted this picture on a precious frame, and honoured it more and more every day.*

"Some time afterwards the king died, and his son Pi-ya-pa-mo† came to the throne. In 519 he sent a high official, called Pi-yen-pa-mo,‡ to present a letter of the following contents: 'To the ever victorious emperor, who is world-honoured as the different Buddha's, ever happy and quiet; who possesses the six supernatural talents and the three stages of wisdom, who is the most exalted on earth and is as Tathâgata himself. He takes care of the true light (Bôdhi) and of the relics of Buddha's body, making pagodas and images all over his country, so that it looks imposing as the mountain Sumêru. His cities and villages are covered with houses; the dwellings of his functionaries in towns and suburbs are as the palaces in Indra's heaven. Numerous are his soldiers, and able to subdue all his enemies; his country is quiet and happy, exempt from all disasters. His people are harmonious and good, they have been renovated by the true law, and the happiness resulting from this is pervading everywhere; just as a mountain covered with snow, of which the water flows down on all sides: fresh and clear, all the rivulets are filled with it, they meander in every direction, but dutifully bring it to the sea, all living creatures meanwhile enjoying it; of all countries in the world, China certainly must be named first.

"'The Son of Heaven, at Yang-chou,§ in the great Liang country, overshadows the earth with his benevolence, and the influence

* About this story we find the following sensible observations in the Wen Hsien T'ung-kau of the celebrated Ma Tuan-lin, published in 1319:—

"The Emperor Wu, of the Liang dynasty, was a great admirer of Buddhism; this was known in and out of China, and when, in his time, envoys from Kandali came to bring tribute, crafty ministers and priests introduced them with this story, in order to flatter him; it is not that the thing is really true.

"The barbarians of the islands only brought tribute, because they sought the advantages of trade and the imperial presents, but they did not come because they really had a sentiment of their duty, and if they were told to say something to please the emperor, they would certainly do so. Moreover, this king was himself a follower of Buddha, who therefore was glad to see his religion established in China, and perhaps he has conceived this idea himself in order to meet the wishes of the emperor [l. l., p. 453]."

† 毗邪跋摩. ‡ 毗員跋摩.

§ 揚州, at that time the capital of China.

of his virtue is like that of heaven; though he is a man he may be said to be a God who has come down to protect the world, accumulating merit and virtue, and saving the world with great compassion. He is my high master, his dignity is perfect, and therefore I revere and honour him with the utmost sincerity.

"At the feet of the Son of Heaven I prostrate myself and ask after his welfare; I present respectfully golden fu-yung * flowers, different perfumes, medicines and other things, hoping you may deign to accept them.

"In the year 520 the same king sent again an envoy to present as tribute products of his country."

It is probable that the Chinese have given the above account from what was told them by the natives, but did not themselves visit the country at this early date. Even its importance for trade seems to have diminished, or faded altogether, for during the following centuries, after the Chinese had already traded in Java a long time, the eastern coast of Sumatra is not mentioned by them, and it is only towards the end of the 10th century that we find it again, but under a new name.

SAN-BO-TSAI.

HISTORY OF THE SUNG DYNASTY (960—1279). Book 489.

"The kingdom of San-bo-tsai † is one of the southern barbarians; it is situated between Camboja and Java, and rules over fifteen different countries.

"Its products are rattan, red kino,‡ lignum-aloes, areca-nuts and cocoa-nuts. They use no copper cash, but their custom is to trade in all kind of things with gold and silver. During the whole year the weather is mostly hot and seldom cold, in winter they have no frost or snow. The people rub their bodies with fragrant oil. The country does not produce barley, but they have rice and green and yellow peas. Their poultry, geese and ducks are about the same as in China.

* 金芙蓉, golden mallows (Hibiscus mutabilis). I do not know whether it was these flowers imitated in gold, or a peculiar species of this ornamental plant, which has always been much valued in China.

† 三佛齊. Arab travellers of the 9th century speak of the island Sarbaza, which was subject to the king of Zabedj = Ya-ba-di or Java. Sar-ba-za and San-bo-tsai of course represent the same name, both perhaps with a not quite correct transcription. Vide "Relation des voyages faits par les Arabes et les Persans dans l'Inde et à la Chine dans le IX. siècle," traduite par Reinaud, Paris, 1845, p. 93. [The identification has since been fully discussed by Professor A. P. van der Lith, l. l., pp. 231–52].

‡ 紫礦, the Buddhist name for the red kino, made from the sap of the Butea frondosa in India. Wells Williams, "Syllabic Dictionary," p. 463.

"They make wine from flowers, cocoa-nuts, penang or honey, which are all intoxicating, though they use no leaven or yeast.

"For their music they have a small guitar and small drums; slaves from Pulu Condore* make music for them by tramping on the ground and singing.

"They write with Sanscrit characters, and the king uses his ring as a seal; they know also Chinese characters, and when presenting letters with tribute they make use of them.†

"They have made a fortified city with a wall of piled bricks, several tens of *li* ‡ in circumference, and they use palm leaves for covering their houses. The people live scattered outside the town, and do not pay any taxes. When they have a war, they at once select a chief to lead them, and everybody provides his own arms and provisions. With a favourable wind the distance from this country to Canton is twenty days.

"The king is styled Chan-pi,§ and in his country there are many people whose names begin with Pu (lit. whose family name is Pu).

"Towards the end of the T'ang dynasty, in the year 905, they sent tribute, and the envoy, who was chief of their capital, got from the emperor the title of the General who pacifies the Distant Countries.

"In the 9th month of the year 960 Si-ri-hu-ta-hia-li-t'an‖ sent an envoy to bring tribute, which he repeated in the summer of the next year. In the winter of the same year tribute was offered by a king of the name Si-ri-wu-ya.¶

"In the spring of the year 962 the king Si-ri-wu-ya sent an embassy of three envoys to bring tribute. They brought back tails of the Yak (Bos grunniens or poëphagus), white porcelain, silver utensils, silk thread, and two sets of saddle and bridle.

"In the year 971 one of the former envoys was sent to present

* 崑崙奴. *Slaves from Condore* seems to have been a general name for slaves, which the Malays probably got from this island and from the other islands in the south of the Chinese Sea; the dance here described is practised even now by the natives of the Natuna and Tambilan islands.

† It is not probable that the natives knew Chinese, but we may infer from this statement that there were already Chinese established in the country, who wrote for the king the letters accompanying his tribute.

‡ 里. Ten *li* is about three miles.

§ 詹卑. Our author probably makes a mistake here. We shall see, by-and-by, that San-bo-tsai was for a long time the principal port on this side of the island, but that probably Palembang and Jambi existed long before San-bo-tsai was destroyed; we think that the author has heard the name of Raja Jambi, i.e. the king of Jambi, and that he has mistaken the name of the country for the name of the king.

‖ 悉利胡大霞里檀. ¶ 室利烏耶.

crystals and lamp-oil; in the next year he came again, and in 974 they brought as tribute ivory, olibanum, rosewater, dates and flat peaches, white sugar, crystal finger-rings, glass bottles and coral-trees. The next year new envoys came, who were presented with caps and girdles.

"In the year 980 their king, Ha-ch'i (Haji or Aji),* sent an envoy, and in the same year it was reported from Ch'auchou, that a foreign merchant from San-bo-tsai had arrived in that port with a cargo of perfumes, medicines, drugs, rhinoceros-horns and ivory; as the wind had been adverse he had been sixty days coming to Ch'au-chou. His perfumes and drugs were all carried to Canton.†

"In the year 983 their king, Ha-chi,‡ sent an envoy, who brought a tribute of crystal, cotton-cloth,§ rhinoceros-horns, perfumes and drugs.

"In the year 985 the master of a ship came and presented products of his country.

"In 988 an envoy arrived for the purpose of bringing tribute, and in the winter of 992 information was received from Canton that this envoy, who had left the capital two years ago, had heard in the south that his country was invaded by Java, and had therefore remained a year. In the spring of 992 he had gone to Champa with his ship, but hearing no good news there he came back to ask for an imperial decree in order that his country might follow his lead.

"In the year 1003 the king Sê-li-chu-la-wu-ni-fu-ma-tiau-hwa ‖ sent two envoys to bring tribute; they related that in their country a Buddhist temple had been erected in order to pray for the long life of the emperor, and that they wanted a name and bells for it, by which the emperor would show that he appreciated their good intentions. An edict was issued by which the temple received the name of Ch'êng-t'ien-wan-shou,¶ and bells were cast to be given to them. Moreover one of the envoys got the title of the General who is attracted by Virtue, and the other that of the General who cherishes Civilizing Influence.**

* 夏池.

† That the arrival of a foreign ship was specially reported to the Emperor, does not necessarily show that it was a rare occurrence, but it was probably done because Ch'au-chou (Swatow) was not open to foreign trade. It seems that this ship put into Ch'au-chou by stress of weather, and it next was sent to Canton, where it should have gone at first.

‡ 遐至, the same name as under,* but written with other characters.

§ 佛綿布, we are unable to say what kind of cotton-cloth is meant here.

‖ 思離朱囉無尼佛麻調華.

¶ 承天萬壽.

** 歸德將軍 and 懷化將軍.

"In the year 1008 the king Sê-ri-ma-la-p'i* sent three envoys to present tribute; they were permitted to go to the T'ai-shan† and to be with the emperor in the audience-hall. Ultimately they were sent back with very liberal presents.

"In 1017 the king Ha-ch'i-su-wu-ch'a-p'u-mi ‡ sent envoys with a letter in golden characters, and tribute in the shape of pearls, ivory, Sanscrit books folded between boards,§ and slaves; by an imperial edict they were permitted to see the emperor and to visit some of the imperial buildings. When they went back an edict was issued addressed to their king, accompanied by various presents calculated to please him.

"In 1028, the 8th month, the king Si-li-tieh-hwa ‖ sent envoys to carry tribute. The custom was that envoys from distant countries, who brought tribute, got a girdle adorned with gold and silver, but this time girdles entirely of gold were given to them.

"In 1067 an envoy, who was one of their high chiefs, called Ti-hwa-ka-la,¶ arrived in China; the title of Great General who supports Obedience and cherishes Renovation,** was given to him, and he was favoured with an imperial edict of the following contents: 'Our reputation and Our teachings overshadow all countries, whether far or near, and if their people are only loyal and dutiful, We always give them Chinese titles, favouring them with fine names in order to distinguish their countries. You have gladly obeyed Our high influence and come across the sea to bring valuable articles as tribute; We praise you for this, and have raised your rank in order to give an encouragement to loyalty and dutifulness.'

"During the period Yüan-fung (1078—1085) envoys came from this country, again bringing silver, pearls, camphor-oil, olibanum and other products of the country. The letter they brought was first forwarded to the court from Canton, where they waited until they were escorted to the capital. The emperor remembering that they had come very far, gave them liberal presents, and then allowed them to return. The next year he gave them 64,000 strings of cash, 15,000 taels of silver, and favoured the two envoys who had come with honorary titles. One of these envoys asked permission to buy golden girdles, various things made of silver, purple

* 思離麻囉皮.

† 泰山, one of the sacred mountains in China, province of Shan-tung.

‡ 霞遲蘇勿吒蒲迷.

§ 梵夾經; our translation is subject to doubt.

‖ 室離疊華; perhaps Sri Dewa.

¶ 地華伽羅, Dewa Kala?

** 保順慕化大將軍.

dresses for Buddhist monks and official tablets,* all which was given him according to his desire.

"In the year 1080 a foreigner from the south arrived at Canton; he said that he had the direction of the affairs in his country, and the daughter of the king sent a letter in Chinese characters to the superintendent of trade, together with camphor-baros and cotton-cloth. The superintendent dared not receive this, and he reported it to the throne, whereupon he was ordered to pay the estimated value of the goods; the said functionary then bought silks for the amount and gave these to them.

"In 1082 three envoys from this country came to have an audience from the emperor, and brought golden lotus-flowers containing pearls, camphor-baros and *sa-tien*;† they all received honorary titles, according to their rank. The third envoy died in China after he had left the capital, and the government gave a present of fifty pieces of silk for his burial.

"In 1083 three other envoys came, who all received honorary titles, according to their rank.

"In the period Shau-shêng (1094—1097) they made their appearance once again.

"In the year 1156 the king Si-li-ma-ha-la-sha ‡ sent envoys to bring tribute. The Emperor said: 'When distant people feel themselves attracted by our civilizing influence, their discernment must be praised. It is therefore that I rejoice in it, but not because I want to benefit by the products of their country.' On this occasion the king had also sent pearls to be presented to one of the ministers, who had however died in the meantime; the emperor gave orders to receive them, and to pay in return the estimated value.

"In the year 1178 they again sent envoys to bring as tribute products of the country: on this occasion the emperor issued an edict ordering that they should not come to court any more, but make an establishment at Ch'üan-chou in the province of Fukien."

The above account does not teach us much about the country it treats of, but still we have thought it advisable to translate it in extenso, as it contains much information on the intercourse which was carried on between China and the countries of these parts during the time. What we said above, on p. 129, about the tribute of which the Chinese always speak, is fully carried out by the details given here. The ceremony of bringing tribute to the emperor was only a pretext to gain facilities for the trade, and the

* 師 牒; the meaning of these words is doubtful.

† 撒 殿; we have been unable to find out the meaning of these words.

‡ 悉 利 痲 霞 囉 蛇, Sri Maharadja; the text has 陀 instead of 蛇, but this is probably a misprint, which we correct without hesitation.

princes of the eastern coast of Sumatra largely availed themselves of it, for this tribute was brought by them many times more than is recorded in the account translated by us, where only those instances are mentioned on which the historian had something remarkable to tell; but in the biographies of the different emperors we meet also with a careful record of other visits, which have not found a place here. It appears also that at last the Chinese began to find these compliments rather expensive, and relegated their foreign friends to Ch'üan-chou, to trade there in the ordinary way.

In transcribing the names of the different kings, the old Mandarin pronunciation has been followed, because these names were written down at court and not carried to China by merchants from southern China; we are however but very insufficiently acquainted with the pronunciation of that period, and so our transcription may often not be quite correct. This is perhaps one of the causes why many of these names look so strange, and cannot be brought back to their original native sound. For the same reason we have omitted the names of the different envoys, which are all given in the Chinese text; as they could not be identified they were of no use, and would only have bewildered the reader.

The house of Sung was driven from the throne of China by the Mongols who reigned under the name of Yüan, but it seems that these did not occupy themselves any more with the southern countries after their unsuccessful expedition against Java; the history of this dynasty says nothing of the other islands, and it was only after its expulsion from China that the former official intercourse was resumed again.

History of the Ming Dynasty (1368—1643). Book 324.

"San-bo-tsai,* formerly called Kandali, for the first time sent envoys with tribute in the reign of the emperor Hsiau-wu of the former Sung dynasty (454—464); during the reign of the emperor Wu of the Liang dynasty (502—549) they came repeatedly, and in the time of the second Sung (960—1279) they brought tribute without interruption.

"In the year 1370 the emperor sent an envoy to command the presence of this country; and in the next year the king, who was called Maharaja Prabhu,† sent envoys with a letter written on a golden leaf, and bringing a tribute of black bears, cassowaries, peacocks, parrots of various colours, different kinds of perfumes,

* 三佛齊, see above, p. 187.

† 馬哈剌札八剌卜, Ma-ha-la-cha-pa-la-pu.

pi-cloth,* blankets of woollen cloth,† and many other articles. The emperor ordered to give them a copy of the imperial calendar, and pieces of silk according to their rank. At the same time the Board of Revenue reported that a vessel with merchandize, belonging to them, had arrived at Ch'üan-chou and wanted to make it pay duties, but the emperor gave orders not to let it pay.‡

"In the year 1373 the king Tan-ma-sa-na-ho§ sent envoys to bring tribute, with a separate letter of congratulation for the next new year.

"At that time there were three kings in this country.

"In 1374 the king Ma-na-ha-pau-lin-pang|| sent envoys to bring tribute, which was repeated in the first month of the next year.

"In the ninth month of the year 1375 a king called Sâng-ka-liet-yü-lan¶ sent envoys to present tribute; these envoys came to court following an imperial envoy who returned from a mission to another country.

"In the year 1376 the king Tan-ma-sa-na-ho died and his son, Ma-la-cha Wu-li** succeeded him; the next year the latter sent a tribute of rhinoceros-horns, cassowaries, white monkeys, black and green parrots, tortoise-shell, cloves, camphor-baros and other articles. The envoys said that the son dared not ascend the throne on his own authority, and therefore asked the permission of the Imperial court. The emperor praised his sense of duty and ordered envoys to bring him a seal and a commission as king of San-bo-tsai.

"At that time however San-bo-tsai had already been conquered by Java, and the king of this country, hearing that the emperor had appointed a king over San-bo-tsai, became very angry and sent men who waylaid and killed the imperial envoys. The emperor did not think it right to punish him on this account.

* 苾布? [See M. d'Hervey de Saint-Denys, l. l., p. 539, note 141].

† 兠羅被, to-lo, blankets; the same word, with the first character changed into 哆, is now used for Spanish stripes [ib., p. 474, note 33].

‡ We have here a direct proof that the envoys, who brought tribute, were at the same time engaged in trade.

§ 怛麻沙那阿.

|| 馬那哈寶林邦, the three last syllables remind us forcibly of Palembang, and would seem to strengthen our supposition (v. p. 199) that, whilst San-bo-tsai was the chief place on the coast, Palembang and Jambi existed already as more or less independent states.

¶ 僧伽烈宇蘭.

** 麻那者巫里, probably Maharaja Wuli.

"After this occurrence San-bo-tsai became gradually poorer, and no tribute was brought from this country any more.

"In 1397 the officers of the Board of Rites memorialized the emperor, saying that the different barbarians had not brought tribute long since.

"The emperor replied as follows: 'In the beginning of my reign the different barbarians continually sent envoys with tribute; amongst these were Annam, Champa, Camboja, Siam, Java, Liukiu, San-bo-tsai, Bruni (northern coast of Borneo), Pahang (on the Malay peninsula,), Sumatra (the northern coast of the island), and many other countries; but lately San-bo-tsai has availed itself of the rebellion of Hu Wei-yung, and by deceitful representations enticed our envoys to their country, and the king of Java, having heard of this, sent men to point out to them that they were misled, and sent them back with great politeness.* Since that time the commercial intercourse has been stopped.

"'The different countries are not of the same mind; Annam, Champa, Camboja, Siam and Liukiu appear at court and bring tribute as before, and moreover Liukiu has sent young men to study here. Whenever the barbarian countries send envoys, they are always treated with politeness, and I am not at all indifferent towards them; but at present I do not know their mind.

"'If we send messengers to Java now it is to be feared that San-bo-tsai will stop them on their way. I understand that this San-bo-tsai was originally a country belonging to Java.

"'You now may take my views and communicate them to Siam, with orders to bring them to the knowledge of Java.'

"On this the ministers of the Board sent a letter saying: 'As long as heaven and earth have been, the difference between ruler and subject, between high and low, has existed. The countries on all sides of China are united in one by our government, and formerly the different barbarians from over the sea came regularly to enjoy its influence; but now San-bo-tsai has got bad intentions, it has deceived our trusty envoys and made itself guilty of treachery. Our holy emperor treats all the barbarians with the same benevolence and justice, how dare they then be ungrateful for these high favours and forget the duties of a subject towards his prince? If the wrath of the emperor is aroused, he may send an army of a hundred thousand men to carry into execution the punishment of heaven, as easily as turning his hand; why do not the barbarians recollect this? Our holy emperor has said that Annam, Champa, Camboja, Siam and Liukiu observe their duties as subjects, but San-bo-tsai alone turns itself against his

* The imperial statement of the case is not quite correct; perhaps the emperor's pride could not openly avow that his envoys had been killed.

holy instructions; though it is smaller than those countries, it ventures to be obstinate and so will cause its own ruin.

"'As you, Siam, reverently observe the duties of a subject, so that the government ordained by heaven has great regard for you, it has been entrusted to you to inform Java that it must speak to San-bo-tsai about its duties, and if this latter country changes its evil ways, it will be received kindly as before.'

"At that time Java had completely conquered San-bo-tsai and changed its name to Ku-kang.* When San-bo-tsai went down the whole country was disturbed, and the Javanese could not keep all the land; for this reason the Chinese, who were established there, stood up for themselves, and a man from Nan-hai (Namhoi) in Canton, called Liang Tau-ming,† who had lived there a long time and roamed over the sea, followed by several thousand men from Fukien and Canton, was taken by them as their chief. He reigned as master of a part of the country, and his son, who once met an imperial envoy sent on a mission out of China, was taken by the latter to the court.

"In the year 1405 the emperor sent a messenger, who was from the same town as Liang Tau-ming, with an order summoning him to court. Tau-ming and his confederate, Chêng Po-k'o,‡ followed this envoy and brought as tribute products of the country. They returned bestowed with many presents.

"In 1406 the (Chinese) chief of Ku-kang, called Ch'ên Tsu-i,§ sent his son, whilst Tau-ming sent his nephew, to go to court together. Tsu-i was also a man from Canton, and though he sent tribute to court, he carried on piracy at the same time, and the envoys from other countries who brought tribute to China, suffered much at his hands.

"In 1407, when the imperial envoy Chêng Ho came back from the west, he sent a messenger to call him; Tsu-i feigned obedience but secretly made plans to rob him too. Another Chinese, of the name Shih Chin ch'ing,|| informed Chêng Ho of this, and when Tsu-i came to attack him, he was made a prisoner, brought to the capital and executed there. At the same time Chin-ch'ing sent his son-in-law to bring tribute, on which the emperor gave an order to institute the office of Pacificator of Ku-kang,¶ and appointed

* 舊港 Ku-kang, "the Old River," is the Chinese name for Palembang up to the present day.

† 梁道明. ‡ 鄭伯可.

§ 陳祖義. We see here that there was a Chinese chief at Ku-kang and another at San-bo-tsai, therefore these two were different places, which question we will discuss at the end of this account.

|| 施進卿.

¶ 舊港宜慰司. Compare p. 169, note ‡.

Chin-ch'ing to it; a seal, a hat and girdle were given to him by imperial command, and since that time tribute was brought repeatedly. Though Chin-ch'ing had received a commission from the emperor, he was at the same time subject to Java; his territory was not large and could not be compared to the old San-bo-tsai.

"In 1424 the son of Chin-ch'ing, called Shih Chi-sun,* reported that his father had died, and asked permission to succeed him, which was granted. In 1425 he sent envoys to bring tribute, who stated that the old seal had been destroyed by fire, on which the emperor ordered a new one to be given him. After this their tribute gradually became more rare.

"Towards the end of the period Chia-ching (1522–1566), the famous Cantonese robber, Chang Lien,† made a disturbance, and after some time the military officers reported that they had captured him; in the year 1577 traders who came to Ku-kang saw that this man had there a large commercial establishment (lit. a row of shops), and was chief of the native ships; a large number of Chinese from Fukien were attached to him, and he was like a superintendent of trade in China.

"This country is a place of much importance for the trade of the barbarians; it is situated at the west of Java, from where, with a fair wind, the passage takes about eight days. The country is divided into fifteen districts, the soil is fertile and fit for agriculture, and there is a saying: 'If you plant rice one year, you have gold for three,' meaning that the harvest is abundant and may be sold for much money.

"The rich people are much given to sensuality.

"The inhabitants of this country are skilled in fighting on the water, and therefore their neighbours fear them.

"The country is rich in water; only the chiefs live on the land, whilst the common people dwell on the river; for this purpose they build their houses on rafts, which are fastened to poles in such a way that, when the tide rises, the rafts are lifted up without being flooded. When they want to remove to another place they have only to pull up the poles, which does not cost much money or labour.[1]

"The lower classes call their superiors by the title of Chan-pi,‡ which means the same as sovereign of the country. Afterwards the place where their first chief lived, was called Chan-pi (Jambi) also.

* 施濟孫. † 張嗹.

[1] [See the account in the Notes by Van der Lith, l. l., p. 247.]

‡ 詹卑. See note § on page 168. The explanation of Chan-pi in this article, is probably a repetition of the error we pointed out there.

"The country has changed its old capital for Ku-kang (Palembang); formerly it was a rich country, but since the conquest by Java it has gradually become poorer, and few trading-vessels go there. Its customs and products have been described in the history of the Sung Dynasty."

In the beginning of the 15th century the eastern coast of Sumatra was also visited by the famous imperial envoy Chêng-Ho (s. above, p. 167), and one of his followers (s. above, p. 170) has given us the following account of the country, which has evidently been used also by the authors of the history of the Ming dynasty.

YING-YAI SHÊNG-LAN (1416).

"Ku-kang is the same country which was formerly called San-bo-tsai; it is also called Palembang,* and is under the supremacy of Java. It borders on Java at the east and on Malacca at the west, in the south are large mountains, and in the north it extends to the sea. From whatever place ships come they enter the Strait of Banka† at the Fresh-water river,‡ and near a place with many pagodas built of bricks, after which the merchants go up the river in smaller craft, and so arrive at the capital.

"A large number of the inhabitants are people from Canton, Chang-chou and Ch'üan-chou,§ who have run away and established themselves here. The people of this country are very rich, the soil being most fertile, and there is a proverb saying: 'when one sows for one year, he can recolt for three,' which is not at all exaggerated.

"The country is not large. The people exercise themselves much in fighting on the water, and as there is more water than land only the houses of the chiefs stand on shore, whilst the rest of the people build their houses on rafts, which are attached to piles, so that they rise with the water and cannot be flooded. When they want to go and live in another place they pull up the piles and remove with their whole house, which is very convenient.

"The river has two flood-tides every day.

"The manners and customs, the marriage and burial ceremonies, as well as the language, are all about the same as in Java.

* 舊港卽古名三佛齊國是也浡淋邦屬爪哇所轄.

† 彭家門.

‡ 淡港, T'an-kang must have been the Chinese name for the Palembang river.

§ 廣東漳泉州, the two latter places in the province of Fukien.

"Formerly, in the period Hung-wu (1368—1398), a Cantonese called Ch'ên Tsu-i, along with some others, ran away with his whole family to this place, where he set up as a chief, and being of a very bad disposition he plundered all the merchant-ships passing there. In 1407 the government envoy, Chêng Ho, arrived here with a fleet, and another Cantonese, called Shih Chin-ch'ing, came to give information about the wicked intentions of Ch'en Tsu-i; the envoy thereupon took the latter alive and sent him to the capital, where he was punished by death. Shih Chin-ch'ing got a cap and a girdle, and was allowed to go back as the chief of Ku-kang and to rule the country; when he died he had no son, so his daughter came in his place, and rewards, punishments, depositions and appointments were all made by her.*

"The products of the country are lignum-alöes in different qualities, yellow wax, benzoë and other articles, all of them not found in China. Benzoë looks as if it were inlaid with silver; it has the appearance of dark glue, with white wax inside, the better sorts having much white and little black; when it is burned the smell is very strong, and the natives, as well as the men from Soli,† like it very much.

"There is a bird from which the so-called crane-crests are taken; it is as large as a goose, with black feathers, a long neck and a pointed bill. Its skull is about an inch thick, outside red and inside like yellow wax; it has a very fine appearance and is called crane-crest;‡ they use it for the handles and scabbards of their swords, and for different other purposes.

"Here also is found the cassowary,§ which is as large as a crane; it has a round body and a thin neck, longer than that of

* This does not quite agree with the account in the History of the Ming dynasty (v. above p. 196), but the contradiction is only apparent. Shih Chin-ch'ing was appointed chief of the Chinese at Palembang in 1407, and in the same year he sent his son-in-law to the capital of China, probably because he had no son, or, at least, not one of sufficient age. When Ma Hwan, the author of the Ying-yai Shêng-lan, visited Palembang, which was before 1416, he found Chin-ch'ing dead, and succeeded by his daughter. This change was not made known to the Chinese court before 1424, when a son of Chin-ch'ing, who either was very young at the time of Ma Hwan's visit, or may have been adopted after that time, had taken his father's place and came to ask the imperial sanction.

† We have stated above that Soli was a country somewhere in India (v. pag. 166), and the men from Soli, meant here, probably were the Klings of the present day.

‡ 鶴頂. This bird is not a crane, but the buceros, characterised by a large beak, with an excrescence on the top of it, which is generally hollow, but solid with some species; even now it is much used in Canton, where brooches and other ornaments for the European market are cut out of it.

§ 火鷄 the fire-fowl; this name has been afterwards applied to the turkey, which is now designated by it. The cassowary is not found on Sumatra, and the specimen our author saw must have been brought from the Moluccos.

the crane; its soft red crest is like a red cap, and begins on both sides of the neck; the beak is sharp and the whole body is covered with hair as of a goat; sparse, long, and of a greenish colour. It has long legs, with hard, black claws, which are very sharp, so that it can rip open a man's belly until the entrails come out and death follows. It likes to eat burning coals, whence its name. It is impossible to kill it with a stick.

"In the mountains of this country a supernatural animal is found, called the divine stag.* It looks like a large pig, and is about three feet high; the forepart of the body is black, the hind part white, and the hair is sleek, short and very fine. The mouth is like that of a pig, but not flat in front; the hoofs have three grooves and it only eats plants, not other animals.

"The cattle, goats, pigs, dogs, fowls and ducks, gourds and fruit, are the same as in Java.

"The people of this country are much given to gambling; they play pa-kui, chess, or fight cocks, in all cases staking money.

"In trading they take Chinese copper coin and cotton-cloth † They also send to China tribute of the products of their country."

On the trade of Palembang and Jambi in the 16th century we find the following notice in the

TUNG HSI YANG K'AU (1618). Book 3.

"When a ship arrives at Ku-kang (Palembang), a present of fruit and silk is offered to the king, for which there is a fixed quantity.

"When the men of Jambi bargain for goods, the price is agreed upon in gold, but they pay only with pepper; *e.g.* if something costs two taels of gold, they pay a hundred picols of pepper, or thereabout. They like to buy outside women, and girls from other countries are often brought here and sold for pepper.

"They use money made of lead.

"San-bo-tsai was formerly known as a rich place, but since it was conquered by Java, the capital had been deserted and few traders go there now."‡

From the different extracts translated by us, and treating of the eastern coast of Sumatra, we see that it was known to the Chinese

* 神鹿, evidently the tapir, a native of eastern Sumatra.

† The Hsing-ch'a Shêng-lan has the following passage:

"Articles of import are glass-pearls of various colours, green and white crockery, copper caldrons, cotton-cloth and silk-gauze of different colours, coloured silks, large and small earthen jars, copper coins, etc."

‡ This account is not very clear: Ku-kang is Palembang, but at once the author introduces "men of Jambi," without saying whether they traded with these at their own capital, or only at Palembang.

of the 6th century as Kandali, which name has since been lost and is not found anywhere else.

In the 10th century the Chinese speak of it as San-bo-tsai, which is the Sarbaza of the Arabian travellers who visited the country a hundred years before; the latter inform us that it was a dependency of Java in their time already, and it would seem that in this, as well as in other instances, these Javanese conquerors settled there and soon made themselves independent from their mother-country, for the Chinese speak of a new invasion about 990 and another conquest about 1377 (v. above p. 189, 161 and 193). With this last conquest the name of San-bo-tsai disappears, the new conquerors establishing their capital at Palembang.

We are not told at what particular place San-bo-tsai was situated, but only see on page 195 that it was apart from Palembang. It is probable, however, that it was on the same river, in the first place, because it was the largest stream of the coast, and therefore the best accessible place for foreign trade, and secondly, on account of the Chinese name which was given to Palembang and its river after the conquest of 1377. They called it Ku-kang, "the Old River," to distinguish it from Jambi, where probably the princes of San-bo-tsai established their capital, after they had been driven away from the old one by the Javanese; this name, "the Old River," given by them to the river of Palembang, implies that they were familiar with it long since, and that it had been visited by them during their previous trade, which we know had always been carried on at San-bo-tsai.

It is not to be supposed that Jambi and Palembang were new places altogether; they probably existed before, and only rose to higher importance by these political changes. We see on page 193 that previous to the conquest of Java, there were three different kings in the country, and the names of Jambi and Palembang occur also before this event, coupled with the names of those kings (v. above p. 188 and 193). The explanation of the name Jambi, given in the history of the Ming dynasty on page 196, does not seem reliable, but rather to have no other authority than the fancy of the writer.

INDRAGIRI.

This country, situated on the eastern coast of Sumatra, a little to the north of Jambi, is mentioned for the first time in the

History of the Ming Dynasty (1368—1643). Book 325.

"Indragiri* is a country under the control of Java; its circum-

* 丁機宜, Ting-ki-gi; the transcription is very inaccurate, but this has often happened to Chinese geographers, when they met with an uncommonly long or hard name.

ference is very small and it does not contain more than a thousand families. As Johore was crafty and bad, and as Indragiri was situated in its neighbourhood, it had always to suffer from it. Afterwards it sought a matrimonial alliance with Johore by large presents of silk, and then it had a little more peace.

"In this country they have fortifications of wood, and at the side of their chief's residence stand a clock-tower and a drum-tower. When the king goes out, he rides on an elephant.

"The 10th month is the beginning of their year.

"The manners and customs of the people are much like those in Java, and the products of the country are the same as of Johore.

"The people set great value on cleanliness; whatever the chief eats is all cut and cooked by himself.

"The precepts against wine are strictly observed, and there is a duty on it; people of rank never drink any, and only vagabonds of the lower classes take it, and even these are scolded and ridiculed by their equals.

"In marrying, the husband goes to the house of the wife and afterwards belongs to her family, therefore they prefer getting girls to boys.

"The bodies of the dead are burned.

"The Chinese who went to trade there found the people fair in their dealings, but since the country has been conquered by Johore, few merchants visit it any more."

TUNG HSI YANG K'AU (1618). Book 4.

"The natives of Indragiri* only trade with us on our ships, to which they come for the purpose. They are nearly the same as those of Johore, but their customs are better and their goods cheaper. Since this country has been invaded by Johore it has no rest, and the foreign traders are also in continual danger, for which reason mariners mostly turn their backs on it."

Before leaving the eastern coast of Sumatra we will treat of the smaller islands which are near it, and which, according to our plan, must find a place here.

BILLITON, OR BLITUNG.

In the account of the Mongol expedition against Java in 1293 (v. supra, p. 157) we have seen that this island was then called Kau-lan, Kô-lan, or Kou-lan;† the Chinese travellers of the beginning of the fifteenth century still know it by the same name, as is shown in the following account, taken from the

* 丁機宜.　　† 勾欄, 校欄.

HSING-CH'A SHÊNG-LAN (1436). THE ISLAND KAU-LAN.*

"Going from the Sacred Mountain in Champa, with a fair wind, one may arrive here in ten days. The island is high and covered with trees; rattan, bamboo, material for rudders, spars, masts, yards and sails are all to be found here.

"When, in the time of the Yüan dynasty, the imperial generals Kau Hsing and Shih-pi went to attack Java with numerous soldiers and large ships, they were driven by a storm on this island, and many of their ships were lost; therefore they landed and constructed a hundred vessels, after which they continued their expedition against Java, captured the chief of the country and brought him to China. Amongst the present inhabitants are still Chinese, for about a hundred sick soldiers were left behind and settled here.

"The weather is always hot, and little rice is produced; the people live chiefly from hunting.

"Men and women have their hair in a knot; they wear a short jacket and a sarong.

"Articles of export are skins of leopards, bears and deer, and also tortoise-shell; articles of import are rice, glass beads of all colours, green cloth, copper articles, green earthenware, etc.

BANKA.

On page 197 we have seen the strait of Banka mentioned in order to determine the situation of Palembang, but nowhere the island itself is described under this name. We think, however, that the following account applies to Banka, or at least to its eastern coast.

HSING-CH'A SHÊNG-LAN (1436).

"Ma-yi-tung† is situated at the west of the island of Billiton Kaulan), in the southern ocean. It has high mountains and flat land intersected by small rivers.

"The people live together in villages. The climate is rather warm. Men and women have their hair in a knot, wear long dresses and sarongs of different colours. The fields are very fertile and produce more than in any other country.

"They highly value chastity, and when a husband dies his wife

* 交欄.

† 麻逸凍 In the History of the Ming dynasty, where this article is copied nearly *verbatim*, the name is written 麻葉甕. We take it to be the island of Banka from its situation, but have not been able to identify the name [Van der Lith, l. l., p. 253—5.]

cuts her hair, lacerates her face and does not eat for seven days, sleeping all the time together with the dead body of her husband. Many die during this time, but if one survives after seven days, her relations exhort her to eat; she may then live, but never marries again. On the day that the husband is burned, many wives throw themselves into the fire and die also.

"Salt is boiled out of sea-water, and wine fermented from sugar-cane.

"Products of the country are cotton, yellow wax, tortoise-shell, areca-nuts and flowered cotton-cloth.

"Articles of import are copper-pots, unwrought iron, cotton-cloth, silks of different colours, etc."

LINGGA.

Hsing-ch'a Shêng-lan (1436).

"The Strait of Lingga* is situated to the north-west of Palembang (San-bo-tsai); high mountains face each other as the teeth of a dragon, and between these the ships pass.

"The soil is barren and yields only little rice; the climate is warm, and in the 4th and 5th month there are heavy rains.

"Men and women have their hair in a knot, and wear a short jacket with a sarong of striped stuff. They chiefly live from piracy, and when they see native vessels they go out with many hundreds of small boats to attack them; when there is a favourable wind these ships may escape, but otherwise they are plundered and the crew killed. Therefore ships are very careful in this neighbourhood."

Northern Coast of Sumatra.

POLI.

History of the Liang Dynasty (502—556). Book 54.

"The kingdom of Poli† is situated to the south-east of Canton, on an island in the sea; the distance from Canton is two months, travelling daily. From east to west the country is fifty days broad, and from north to south it is twenty days; there are one hundred and thirty-six villages in it. The climate is warm, just as the summer in China; rice ripens twice a year, and plants and trees are very luxuriant. The sea produces spotted conches and

* 龍牙門, the first two characters, used for the transcription of the native name Lingga, originally mean "Dragon's teeth," and we next see the writer, preoccupied by this name, discover a resemblance to a dragon's mouth in the configuration of the country.

† 婆利, Po-li, Pa-li, Pa-ri or Bari.

cauries. They have a kind of stone, called *kampara*,* which is soft when first taken and may be cut into figures and dried, after which it becomes very hard. The people of this country use cotton for their clothes, and also make sarongs of it.

"The king uses a texture of flowered silk wrapped round his body; on his head he wears a golden hat of more than one foot high, its shape resembling the one called *pien*,† in China, and adorned with various precious stones. He carries a sword inlaid with gold, and sits on a golden throne with his feet on a silver footstool. His female servants adorn themselves with golden flowers and all kinds of valuables, and some of them carry white feather-dusters or fans of peacock-feathers.

"When the king goes out, his carriage, which is made of different kinds of fragrant wood, is drawn by an elephant. On the top of it is a flat canopy of feathers, and it has embroidered curtains on both sides. People blowing conches and beating drums precede and follow him.

"The king's family name is Kâundinya,‡ and he never before had any intercourse with China. When asked about their ancestors, or about their age, they do not know it, but they say that the wife of S'uddhôdana § was a woman from their country.

"In the year 518 they sent an envoy to present a letter of the following contents: 'We humbly enjoy that the holy prince (of China) believes in the three gems, and has erected pagodas and temples, beautiful, large and imposing, filling the whole land. The roads of his country are large and even, clean, and without filth; terraces and halls abound everywhere, resembling the palaces of heaven, grand, beautiful and mysterious, the world has nothing to compare with them. When the holy king (of China) goes out numerous soldiers surround him on all sides, and feathery banners are about him everywhere. The people in the capital are well dressed; the shops are abounding and rich, filled with valuable articles; the king's institutions are excellent, and there is no thieving. Students collect from all sides to study the three conveyances (triyâna), and the preaching of the true law goes over the whole world, and comes to all kingdoms as an over-

* 蚶貝羅; we have not been able to trace this name. The material meant here is well known; it is a soft silicious stone, hardening on being exposed to the air, and found in various parts of the archipelago.

† 弁.

‡ 憍陳如.

§ 白浄王. As Kâundinya was the maternal uncle, and S'uddhôdona the father of Buddha, it would seem that the princes of this country were immigrants from India, who claimed relationship with Buddha and were fervent Buddhists; this may explain the letter to the emperor of China, of which we subjoin a translation, though as we observed before, such letters must be regarded with diffidence.

shadowing cloud, or as a penetrating rain. The course of his teaching is like a large river full of water, pure, cool, deep and large; all that lives is benefited by it, and it cannot be defiled. In his country the forces of nature are well balanced and no disasters strike it.

"'The holy king at Yang-chow, in the great country of Liang, has no equal. With paternal love and sympathy he rules over his country, treating and fostering all mankind as his children, feeling with them in their difficulties, making no difference between friend and foe, relieving those that are destitute, and not hoarding for his own benefit. He shines on every thing, as the light of the sun; all rejoice in him, as in the bright moon.

"'His ministers are wise and virtuous, his officers pure and faithful; with the utmost loyalty they serve their prince, thinking of nothing else.

"'I humbly consider the emperor as my true Buddha. I am the king of the country Poli, and now reverently prostrate myself, and do homage at the feet of my holy lord, only hoping that Your Majesty may know my feelings, which I have cherished long since, and which are not of to-day. Mountains and seas separate us, and I cannot have the happiness of coming myself to you, but I now send an envoy to present golden mats and other things. I have written down my true feelings.'

"In the year 523 the king, Pin-ka,* again sent an envoy, called Chu-pa-ti,† to bring as tribute white parrots, glass utensils, cotton-cloth, cups made out of shells, different kinds of perfumes and medicines, altogether a considerable number of articles."

HISTORY OF THE SUI DYNASTY (518—617). Book 82.

"When from Giau-chi (Northern Annam) one goes southward by sea he passes Chih-t'u and Tan-tan,‡ and next comes to Poli.§ Its breadth from east to west is four months' travel, and from north to south it takes forty-five days.

"The king's family name is Ch'a ri-ya-ka,‖ and his personal name Hu-lan-na-po.¶ The functionaries are called Tu-ka-ya-na,** and those of lower rank Tu-ka-si-na.††

"The people of this country are skilled in throwing a discus-knife; it is the size of a (Chinese metal) mirror, in the middle is a hole, and the edge is like a saw; when they throw it at a man

* 頻伽, Pin-ka or Vingka. † 珠貝智.

‡ 赤土, the Red Earth, and 丹丹; the first, a place in the Gulf of Siam; the second, Southern Siam or Northern Malacca.

§ 婆利. ‖ 剎利邪伽. ¶ 護濫那婆.

** 獨訶邪拏. †† 獨訶氏拏.

they never fail to hit him. Their other arms are about the same as in China. Their customs resemble those of Camboja, and the productions of the country are the same as of Siam. When one commits a murder or theft they cut off his hands, and when adultery has been committed, the culprit has his legs chained for the period of a year.

"For their sacrifices they choose the time when there is no moon; they fill a bowl with wine and eatables and let it float away on the water; in the eleventh month they have a great sacrifice.

"They get corals from the sea, and they have a bird called s'âri* (beo, gracula religiosa), which can talk.

"In the year 616 they sent an envoy to appear at court and bring tribute, but they ceased to do this afterwards."

New History of the T'ang Dynasty (618—906). Book 222.

"Poli† is situated at the south-east of Camboja; going by sea from Northern Annam (Giau-chi) and passing the gulf of Siam and Malacca, one arrives there. The country is large, and its settlements are numerous; a horse is also called *ma* by them. Its circumference is many thousand *li*. In this country they have a kind of fire-pearls,‡ of which some are as large as a hen's egg; they are round and white, and shed a lustre to a distance of several feet; if you let the sun shine through them on tinder it takes fire immediately.

"The country produces tortoise-shell, spotted conches and a stone called *kampara*;§ this substance is soft at first, so that you can cut it, but after it has been carved it becomes hard. There is also a bird called s'âri (beo, gracula religiosa), which understands human speech; its body is black, its head red, and it has claws like a hawk.

"They carry the teeth of wild beasts in their ears and wrap a piece of cotton round their loins; cotton is a plant of which they collect the flowers in order to make cloth of them; the coarser kind is called *ku-pa*,‖ and the finer cloth *t'ich*.¶ They hold their markets at night, and cover their faces.

* 舍利. † 婆利.

‡ 火珠, evidently a kind of burning-glass, but whether of glass or crystal, and manufactured in what place, we have no means to ascertain.

§ 蚶貝羅. See page 204.

‖ 古貝 sometimes written 吉貝, transcription of the Malay name for cotton: *kapas*, *kapa* and *kapeh*.

¶ 㲲.

"The king's family name is Ch'a-ri-ya-ka,* and his own name Hu-lu-na-po; † his dignity is hereditary. His dress consists of a piece of flowered silk or cotton, adorned with pearls, wrapped round his body; he sits on a golden throne, and on both sides are attendants with white dusters and fans of peacock feathers. When he goes out he sits in a chariot drawn by elephants, with a canopy of feathers and embroidered curtains, whilst music is made by sounding gongs, beating drums, and blowing conches.

"At the east of this country is situated the land of the Raksha's,‡ which has the same customs as Poli."

The country called Poli (Pali, Pari, or Bari) in the three preceding articles, is said by all Chinese geographers to be the northern coast of Sumatra, and its neighbourhood to the Nicobar Islands is a sufficient proof that they are right. It is true that the direction of these islands is wrongly given, but this occurs often in those earlier times, and especially in those cases where, as here, the notice has been compiled from other sources, by an author who understands nothing of, and cared little about, the subject.

It is probable that here, as in other instances, the whole country has been called after the capital or chief native establishment on the coast; what particular place this may have been, we have no means to ascertain. The rulers were Hindoos, professing the Buddhist religion, and it seems that an extensive part of the country recognized their authority.

From this time the name of Poli disappears, and it seems that intercourse with China ceased completely as well, for we do not find it mentioned again before the beginning of the fifteenth century, and the "T'hai-ping Hoan-yü Ki," a universal geography, published between 976—983, only gives an abstract from the three articles we translated just now, without adducing any new material.

We therefore come at once to the beginning of the fifteenth century, when this country was visited by the Chinese embassy of which we spoke on p. 170; and two of its members, the same to whom we are already indebted for very interesting accounts of other countries, have also left us a description of this, to which they give the name of Sumatra.

* 刹利邪伽. The first two characters are a common transcription of the word Kshattriya, the caste of warriors and kings.

† 護路那婆.

‡ 羅刹. This has been, for a long time, the name of the Nicobar Islands, probably on account of the wildness and bad reputation of their inhabitants.

SUMATRA.*

YING-YAI SHÊNG-LAN (1416).

"This country is situated on the great road of western trade. When a ship leaves Malacca for the west, and goes with a fair eastern wind for five days and nights, it first comes to a village on the sea-coast called Ta-lu-man; † anchoring here, and going south-east for about ten *li* (3 miles), one arrives at the said place.

"This country has no walled city. There is a large brook running out into the sea, with two tides every day; the waves at the mouth of it are very high, and ships continually founder there.

"To the south of this place, at a distance of more than a hundred *li*, are high and wild mountains; to the north is the sea, and on the east are also high mountains, extending as far as the territory of Aru. Due west, on the sea-coast, are two small countries: the first is the territory of the king of Nakur,‡ and the next that of the king of Litai.§

"The king of Sumatra was formerly attacked by the king of Nakur and killed by a poisoned arrow; he left one infant son, who could not avenge his father, and therefore the king's wife made a public oath, saying: 'Whoever can avenge the death of my husband and recover his land, I am ready to marry him and reign together with him.' When she had said this there was an old fisherman who roused himself, and said: 'I am able to avenge him.' Thereupon he led the army, defeated and killed the king of Nakur, and avenged the death of the late king. When the king of Nakur was killed, his people retreated and submitted, and did not undertake any more hostilities. The king's wife did not break her former engagement, but married the old fisherman, who was called the old king, and all affairs of the palace and the country went by his orders.

"In the year 1409, moved by his sense of duty, he brought as tribute products of his country, and was favourably received by the emperor. In the year 1412 he returned to his country, when the son of the former king, having grown up, secretly leagued with the nobles, killed his stepfather, the fisherman, and took his

* 蘇門荅剌, sometimes written 須文達那.

† 荅魯蠻, Ta-lu-man, or Ta-ru-ban. It may be interesting to compare with this the account of Ibn Batuta, who visited this place in 1346. We quote from the translation by S. Lee, p. 200: "When we had arrived at the shores of this place, we put into the port, which is a small village in which there are some houses, as well as magazines for the merchants, and from this the city of Sumatra is at the distance of four miles, at that place resides the king."

‡ 那孤兒.

§ 黎代.

throne. The fisherman had a nephew called Su-kan-lah,* who assembled his followers with their families, and ran away into the mountains, where he made a fortification and soon began attacks to revenge the death of his uncle.

"In the year 1415 the eunuch Chêng Ho arrived here with a fleet; he sent his soldiers to take Su-kan-lah prisoner, and sent him to the court of China, where he was condemned to death. The son of the king was grateful for the imperial favour, and continually sent tribute to the court of China.

"The climate of this country is not the same during the whole year; in the daytime it is warm as in summer, and at night it is cool as in autumn. In the fifth and seventh months there is much malaria.

"The mountains produce sulphur, which is found in caves, and on these mountains no plants or trees will grow, the ground being scorched. The fields are not very fertile either; they only plant rice in dry fields, where it ripens twice a year, but barley and corn are not found. Pepper is grown near the mountains, where people plant it in gardens; it grows against other objects. Its flowers are yellow and white, and pepper is the fruit, which is first green and becomes red when it is ripe. When half ripe it is gathered and dried in the sun in order to be sold. The pepper with large and hollow kernels comes from this place. Every hundred caties, official weight, are sold for eighty pieces of gold, representing a value of one tael of silver.†

"The fruits are plantains, sugar-cane, mangostine, nangka, etc. There is one kind called by the natives *durian*,‡ eight or nine inches long, and with sharp points on its surface; when it is ripe it divides into five or six parts, and when opened smells like rotten beef; it has large kernels covered with a juicy and white pulp, fourteen or fifteen in number, and very sweet and nice; when the kernels are roasted they taste like chestnuts.

"Citrons are abundant throughout the whole year; they are not very sour, and can be kept a long time without rotting.

"There is a kind of mango, called by the natives *yam-pa*;§ it is like a pear, but a little longer, and has a green skin; its smell is very strong, and when eaten the skin is removed and slices of the pulp are cut off; it is sour and sweet, very nice, and the kernel is the size of a fowl's egg.

"Peaches, pears, and such fruit are not found at all.

* 蘇幹刺, probably Su-kan-dah (lah) or Sekander.

† It is probable that an error has crept into the text here.

‡ 賭爾焉, *tu-ri-yen*; the original has 烏 instead of 焉, which must be a misprint.

§ 菴拔.

"The vegetables are onions, leek, ginger, and mustard; squashes are very abundant and last long; the water-melon is green outside and has red kernels; some grow to the length of two or three feet.

"The people keep many cows, and milk is extensively sold. The goats are all black; white ones are not found. There are no capons, the natives not understanding how to castrate them, but their large fowls weigh as much as seven catties, and are very tender; with a little cooking they taste well, in fact they are superior to the fowls in any other country. The ducks have short legs, and some weigh as much as five or six catties. They have also mulberry trees, and the people rear silkworms, but they do not understand how to spin the silk, and only make wadding of it.

"The customs of this country are pure; the language, the marriage and burial ceremonies, the dress, etc., are all the same as in Malacca.

"The houses of the people are high from the ground and have no flooring of boards: they split up cocoa- or areca-palm trees, which are fastened with rattan, over this they put rattan-mats and so live in them.

"This place is visited by many native ships, and the trade in native articles is very important; the money used are coins of gold and tin. The golden coins are called *dinar*,* and contain seven-tenths of pure gold; they are round, have a diameter of 5 *fên* official measure (1.6 centimeters), and weigh 2 *fên* 3 *li* (a little more than 9 decigrammes).†

"In trading they make much use of tin money."

HSING-CH'A SHÊNG-LAN (1436).

"Going from Malacca with a fair wind it takes about nine days to arrive at this country. The people live along the sea-shore, and the land is not very fertile; it produces pepper, which grows against trees and poles; the leaves are like those of flat beans, the flowers are yellow and white, and hang down in clusters, like those of the coir-palm. One *po-ho*,‡ being a native weight equal to three hundred and twenty catties, official weight, costs twenty pieces of silver, weighing six taels.

* 底那兒.

† For the reduction of these weights and measures, see note on page 177. Instead of 2 *fên* 3 *li*, however, we have to read 2 *ch'ien* 3 *fên*, which is ten times as much, and then we get a weight of about 10 grammes for the *dinar*, which suits its size better, and agrees with the details given on the next page.

‡ 播荷, bahar or bahara, a commercial weight varying much in different places, and still in use during the first times of European intercourse.

"The golden dinar* is a golden coin, twenty of which weigh 5 taels and 2 mace of gold.†

"The manners and customs are pure; many people live from fishing; in the morning they put out to sea in boats made out of one tree, and they return at night.

"The men wrap up their hair in a white handkerchief and tie a coarse cloth round their loins; the women bind up their hair in a knot, have the upper part of the body naked, and round the lower part a coloured cloth.

"They make salt out of sea-water, and wine from the fruit of a palm-tree.‡

"Articles of import are green and white earthenware, copper, and iron, Java-cloth,§ coloured silks, etc."

HISTORY OF THE MING DYNASTY (1368—1643). Book 325.

"Sumatra‖ is situated at the west of Malacca, at a distance of seven days if the wind is fair. It is a centre of intercourse in the western seas.

"In the beginning of the reign of the emperor Ch'êng-tsu (1403—1424), envoys were sent to this country to inform its ruler of his accession, and to call him to court, whilst in the year 1404 the emperor sent envoys to present the chief of the country with velvets, silks, and gauzes embroidered with gold, and to bring him to the imperial court. When the eunuch Yin Ch'ing¶ was sent to Java, he visited this country also, and when Chêng Ho went to the western ocean in 1405, presents were sent again.

"Before Chêng Ho arrived there the chief, Tsai-nu-li-a-pi-ting-ki,** had sent envoys with Yin Ch'ing to go to court and carry tribute; the emperor issued an edict appointing him king of Sumatra, and gave him a seal, a commission, and a court-dress of coloured silk. After this he sent tribute every year, and did not cease as long as the emperor Ch'êng-tsu lived.

* 抵納.

† This would give 10 grammes for the weight of a dinar.

‡ 茭樟子. Kajang fruit. Kajang is the Malay name for mats made from different palm-leaves, chiefly of the nipa palm (nipa fruticans). It may be that this palm-tree is meant here, but the author is certainly mistaken in saying that wine is made from the fruits, as only the sap from the flower-stalks is used for this purpose.

§ 爪哇布, we have been unable to ascertain what kind of cloth is meant here.

‖ 蘇門答剌. ¶ 尹慶.

** 宰奴里阿必丁巳; the three last syllables, perhaps, express the native title *petinggi*.

"Chêng Ho was sent three times to this country; when he came there for the first time, the father of the king had been fighting with his neighbour, the king of the country of the Tattooed Faces,* and had been killed by an arrow; the king's son was still young, and his mother cried out to the people: 'Whoever can avenge me, I will take him for my husband and reign together with him.' There was a fisherman who heard this; he rallied the people of the country and went to attack the enemy; after killing their king he came back, and the wife of the late king took him for her husband, on which he was called the old king.

"When the son of the late king was grown up he secretly leagued himself with some people of rank, killed the old king and took his place; a younger brother of the old king, called Su-kan-la (Sekander),† escaped into the mountains and harassed the country for several years.

"When Chêng Ho went there again in the year 1414, this Su-kan-la was dissatisfied that he got nothing from the imperial presents, and therefore collected several thousands of men to attack and rob Chêng Ho; the Chinese soldiers and the people of the country routed them, and killed a large quantity of these robbers, who were pursued as far as Lambri‡ and brought back prisoners. The king then sent envoys to present his thanks.

"In the year 1426 envoys came with congratulations, and in 1430, the emperor, seeing that the envoys of many outer barbarian countries did not appear with tribute, sent Chêng Ho and Wang Ching-hung§ to go to all these countries with the following edict: 'I have received the mandate of Heaven; I am carrying out the great task handed down to me by my illustrious ancestors, and reign as sovereign over all countries. I have taken the benevolent way of my ancestors, spreading peace over the whole world, and not seldom forgiving guilt. At the beginning of my reign I have adopted the style of Hsüan-tê. You, different barbarians, who live far away over the sea, perhaps have not yet heard of all this. I now send the eunuchs Chêng Ho and Wang Ching-hung, with an edict and orders, and I hope that you may follow the good path, treat your people well and enjoy together the happiness of universal peace.' These envoys went to more than twenty countries, amongst which was Sumatra.

"The next year this country sent envoys twice to bring tribute. In the year 1433 they brought a tribute of dragon's-blood. In the year 1434 the king's younger brother came to court and died in the capital. The emperor pitied him much, bestowed a posthumous title on him, appointed an officer to take care of the

* 花面國, the same as Nakur, q. v.

† 蘇幹剌. ‡ 南渤利. § 王景弘.

funeral, and gave one family to look after the grave. At that time Wang Ching-hung had gone again to that country, and the king sent another younger brother to go with him to the court; he told that the king was already old and could not manage the affairs any more, and now asked permission to cede the throne to his son, called A-pu-sai,* who was accordingly appointed king of the country.

"From this time their tribute became gradually more rare. In the year 1486 envoys from this country came to Canton, but as the authorities there found they had no seal or token as a sign of their office, they locked their letter in the treasury and told them to go back. The envoys sent some of their people to the capital by a different way, bringing various articles as tribute, but as the return presents were not many, no envoys of them came any more.

"During the period Wan-li (1573—1619) the reigning family was twice changed, and at last their king was a slave. At first the master of this slave was one of the great dignitaries of the kingdom, and commander of the troops. The slave was treacherous and cunning; first his master ordered him to take care of the elephants, and the elephants all became fat; he was ordered to superintend the fish tax, and every day he presented large fish to his master. The latter was much satisfied with him and employed him as an attendant, who was always about his person.

"Once he followed his master to court, where he saw the king exalted and dignified as a god, and his master bowing with the utmost reverence.

"When they left the palace he said to his master: 'Why were you so very reverent?' His master replied: 'It was the king, how could I dare to be otherwise.' The slave said again: 'It is only that my master does not wish to be king, if he wished he should be one at once.' His master scolded him and ordered him to retire.

"On another day he came again and said: 'The body-guard of the king are few in number; you, as commander of the army must certainly take leave of the king on going out of the town; I pray you to take me with you, and then you must tell the king that you have a secret affair, and ask him to send away those who are about him; the king will have no suspicion, and then I will avail myself of the opportunity, kill him and make you king; this is as easy as to turn my hand.'

"His master assented; the slave indeed slew the king and cried out loudly: 'The king did not follow the right path, therefore I have slain him, and now my master is king; whoever has to say anything against it, will feel this sword.'

* 阿卜賽.

"The people submitted and dared not stir; his master then usurped the throne and let his slave do whatever he chose; he gave him the command of the army, and not long afterwards the slave killed his master and put himself in his place. He then took great precautions: he enlarged the palace and made six doors to it, which nobody could enter without permission, and even the high officers were not allowed to come to the audience hall with their swords; when he went out he sat on an elephant bearing a small pavilion all surrounded with curtains, and there were more than a hundred of these animals got up like this, so that the people could not make out on which one the king was sitting.

"The customs of the people are pretty good, and they are quiet in their speech; only the king is much given to cruelty; every year he kills more than ten people and washes his body with their blood, saying that this may prevent disease.

"Amongst the things they brought as tribute were precious stones, agate, crystal, carbonate of copper,* good horses, rhinoceros-horn, ambergris, lignum-aloes, putchuk, cloves, swords, bows, tin, pepper, sapanwood, sulphur and such more.

"When merchant vessels go there they trade with them in a fair way. The soil is poor and they have no wheat, but there is rice which ripens twice a year. Merchants from all sides collect at this place, and as the country is distant and the prices high, the Chinese who go there make more profit than anywhere else.

"The temperature is hot during daytime and cool at night; in summer malarious fevers are prevalent.

"The women leave the upper part of their body bare, and only fasten a piece of cloth round their loins. The customs and manners of this country are much like those of Malacca.

"After the murder of the king, the name of the country was changed into Atjeh."†

The three preceding articles, beginning on p. 208, give the name of Sumatra to the northern part of the island, which is now entirely called by this name. In this case the name is certainly taken from the capital or principal settlement on the coast. Marco Polo, who visited Sumatra in 1290, speaks of Samara, which probably is the same place, as the difference in sound is easily explained by the circumstances under which Polo's book was written. Ibn Batuta (1346) correctly calls it Samathra, or Samuthra, and describes its situation nearly in the same terms as our author. It appears that this place, Sumatra, was not situated

* Here follows an article called 回回青, which I have not been able to identify.

† 亞齊, a correct transcription of the native name, which has been corrupted by Europeans into Achin or Acheen.

on the spot of the present Acheh, but more to the east, on one of the smaller rivers which fall into the sea there; this is proved beyond doubt by the fact that three smaller states were situated due west of it, before the Indian Ocean, on the western side of the island, was reached, the last of these three occupying the site of the present Acheh, as will be shown afterwards. Native tradition points to Pasei as the former seat of the ruling state in these parts, and it seems that this tradition is right here, for we find the name Samudra preserved in a village on the left bank of the Pasei river, about three miles from the sea. In this village is the tomb of a sainted Arab, who is said to have introduced the Islam into the country. It is possible that this villege only borrowed its name from the ancient capital, and is not situated at the place where this stood; it may also be that this Arab apostle was not buried in the capital itself, but it is more probable that we have here a remnant of that capital, and that the man who introduced the Islam lived and preached, and then was also buried, where this influence could be turned to its best account, *i.e.* in the political centre of the country, as was the habit of these ardent, but well advised men. At the mouth of the Pasei river we find even now the high and dangerous surf mentioned above on p. 208. We do not learn at what epoch Sumatra lost its importance, and was supplanted by Acheh; the time assigned to this event in the 'History of the Ming Dynasty,' translated just now, is certainly too recent, and we think that the latter part of this article does not apply to Sumatra, but to the new capital of Acheh.

Of this latter place, at least under its modern name, we have only found the following account:—

ACHEH.

TUNG HSI YANG K'AU (1618). Book IV. fol. 11r.

On the Trade.

"When a ship arrives there is a guard who looks out and informs the king of it, and an elephant is sent to take the captain, who goes with it, and has an audience. Presents of fruit and silk are sent to the king, who on his side gives him a dinner. The taxes on the trade are said to be very just."

(Here we omit a quotation from the Hsing-ch'a Shêng-lan, which has already been translated on page 211.)

"The ambergris costs 12 golden coins the tael, which makes 192 golden coins a caty; taking such a golden coin as equal to 9000 copper cash of China, the price cannot be called cheap.

"Those who come from far to this country make more profit than elsewhere, and during the Sang dynasty it had the reputation of possessing much gold, silver and silk, whilst the skill of its

artisans was highly praised. Even now it is still as rich and prosperous as before."

No other places on this coast are mentioned in the older sources, but the two accounts, for which we are indebted to the Chinese embassies of the beginning of the 15th century, describe quite a number of them, which notices we will now translate, beginning on the eastern side of the north-coast.

THE COUNTRY OF THE FRESH-WATER SEA.*

HSING-CH'A SHÊNG-LAN (1436).

"This country is connected with the territory of Aru,† and is three days away from Malacca. There is a sea-arm entering the land, with a large stream (or large streams) falling into it; this stream covers the sea to a large distance, and its water is clear and sweet, for which reason the mariners who pass it call it the sea of fresh water.

"The ground is fertile and rice abundant; its grain is pointed and small, but has a delicious flavour.

"The manners and customs of the people are rather good. The weather is always warm; men and women have their hair in a knot, and wear a striped sarong round their loins.

"Articles of import are gold, silver, iron goods, earthenware, etc."

This place probably is the mouth of the river Rokkan and the adjacent part of the Sumatra coast. It falls into the sea, south of the Aru-group, through a large estuary, into which two other rivers of considerable importance discharge their waters, and where, during the rainy season, the sea-water may easily be covered by a sheet of fresh water. As there was no place of note in this neighbourhood, the name of this phenomenon has been given to the whole locality.

THE KINGDOM OF ARU.‡

YING-YAI SHÊNG-LAN (1416).

"Going from Malacca with a ship for four days and nights one may arrive there.

"In this country is a river called the Fresh-water River, and entering this one arrives at the settlement. On the south of this country are large mountains, on the north it has the sea, on the west it is connected with Sumatra, and on the east there is all flat land.

* 淡洋 lit. the Fresh-water Sea.

† 亞魯, v. next article.

‡ 啞魯.

"The soil is only fit for dry rice-fields, and the rice is of a very small grain, but there is always a sufficient quantity of it. The people live by agriculture and fishing.

"Their manners and customs are pure; the ceremonies of marriage, burial, etc., are similar to those in Java and Malacca. Foreign goods are little used by them. Cotton-cloth is called k'au-ni.* Besides rice they have plenty of cattle, goats, fowls and ducks; milk is much used amongst them.

"The king and the people are all Mahommedans.

"In the forest is a sort of flying tiger, of the size of a cat; its whole body is covered with hairs of an ashy colour, and it has fleshy wings like a bat; these wings connect the fore with the hind legs and it cannot fly far; when it is caught it will not be fed, and soon dies.

"The country is small, and produces nothing for export but fragrant resins and such things."

HSING-CH'A SHÊNG-LAN (1436).

"Aru † is situated opposite to the Sembilan-islands; ‡ with a fair wind it takes three days and nights to go there from Malacca.

"The customs of the people, and the climate, differ little from Sumatra. The soil is barren and produces little; the people chiefly live on bananas and cocoa-nuts.

"Men and women go with the upper part of the body naked, and wear round the lower part a coarse cloth; for their livelihood they fish in the sea, in boats made out of one tree, or they go into the forest to collect camphor and such things. Every man carries a bow and poisoned arrows to protect himself.

"The products of the country are crane-crests and camphor, which they sell to foreign traders. In exchange they take coloured silks, earthenware, glass beads, etc."

HISTORY OF THE MING DYNASTY (1368—1643). Book 325.

"Arú § is situated near Malacca; with a fair wind the passage takes three days.

"The customs and manners are about the same as in Sumatra; their fields are poor and yield little, but they plant large quantities of plantains and cocoa-nuts, which they use as food.

"In the year 1411 their king, Su-lu-tang Hut-sin,|| sent envoys to bring tribute, together with those of Calicut and other countries.

* 考尼, perhaps *kain*, the Malay name for textiles.

† 阿魯.

‡ 九州, the Nine Islands, or Pulu Sembilan, on the coast of Perak.

§ 阿魯 or 亞魯.

|| 速魯唐忽先, probably Sulthan Husain.

The envoys were presented with caps, girdles, silks, money and paper-money, and presents for the king were sent with them.

"In the year 1412 Chêng Ho visited their country as an imperial envoy.

"In the year 1419 the king's son, Tuan A-la-sa,* sent envoys to bring tribute, which was repeated in 1421 and 1423. In 1431, when Chêng Ho went to the different barbarian countries, presents were also sent to this land, but afterwards their tribute-bearers did not come any more."

The name of the country, mentioned above, still survives in the Aru islands, but from the description it clearly follows that not these were meant, but a place on the coast of Sumatra. It is however probable that the Aru islands belonged to it, and either are indebted to it for their name, or that it was called after them; we think, therefore, that it was that part of the coast which is nearest to them, about the mouth of the Burumon River.

When the Europeans arrived in these parts, Aru still existed as a separate kingdom, and in the first war of the Portuguese with Acheh we find the king of Aru amongst their allies.

On its western frontier this country bordered on the territory of Sumatra, which has been treated already, and we may therefore proceed at once to the western side of the latter state, where three other countries were visited by the Chinese envoys.

NAKUR.

YING-YAI SHÊNG-LAN (1416).

"The king of Nakur † is also called the king of the Tattooed Faces. His country is situated at the west of Sumatra, and consists only of one mountain-village; his people tattoo their faces with three pointed green figures, and for this reason he is called the king of the Tattooed Faces.

"The country is not large, and has only about a thousand families. The arable land is small with regard to the population; they make dry rice-fields, but the product is not very abundant.

"Pigs, goats, fowls and ducks are all found.

"Their language, manners and customs are the same as in Sumatra, but there are no articles of export, the country being so small."

HSING-CH'A SHÊNG-LAN (1436).

"The country of the Tattooed Faces ‡ borders on Sumatra,

* 段阿剌沙, Tuan Arsa (?) † 那孤兒, Na-ku-ĕrh.

‡ 花面國; we have seen just now that Nakur was known by this name also.

and extends as far as the sea of Lambri; it is all situated along the mountains, but still its fields produce rice in sufficient quantity.

"The weather is variable. The men tattoo their faces with representations of flowers and animals; their hair hangs loose, and the upper part of the body is naked, the lower part being covered with a single piece of cloth. The women wear a coloured piece of cloth, and have their hair in a knot behind the head.

"The country is rich in cattle, goats, fowls and ducks.

"The strong do not oppress the weak; high and low equally cultivate the ground; the rich are not proud towards the poor, whilst the poor do not steal; indeed it may be called a virtuous country.

"The land produces different kinds of perfumes, and also blue lotuses.*

"In the neighbourhood is the mountain Nakur,† which yields sulphur. When our fleet was in Sumatra, men and ships were sent there to collect it.

"Articles of import are silks, earthenware, etc.

"The chief, having received presents from the emperor, has ever since sent products of his country as tribute."

The account in the history of the Ming dynasty is only an abbreviated copy of the two articles given above, and may therefore be omitted.

It seems that this Nakur was an advanced establishment of the Battas, the wild natives who lived in the interior, whilst the coast was more settled by Malays, or similar people.[1] The limited number of a thousand families, given by the author, can only apply to those who lived in the neighbourhood of the Sumatra frontier; but the circumstance that they were able to carry on a war with so large a country as Sumatra, and the fact, mentioned by the author, that the territory extended inland as far as the sea, on the west-coast of the island, sufficiently show that they were a tribe of considerable importance.

LITAI.

YING-YAI SHÊNG-LAN (1416).

"The country of Litai‡ is situated at the west of Nakur; on the south it is bordered by large mountains, on the north it extends

* 青蓮花 (?) † 那姑兒.

[1] [On the probability of Nakur being identical with Angkola in the Batta country, see Van der Lith, l. l., pp. 237—43.]

‡ 黎代. The history of the Ming dynasty, which has copied its account from this article, writes 黎代 Li-fah; we have preferred to follow the original narrative.

as far as the sea, and on the west it is bordered by Lambri. The population amounts to one or two thousand families, who have chosen one man to be their chief, and to administer their affairs. They acknowledge the supremacy of Sumatra. The country produces nothing for export. The language and the customs are the same as in Sumatra.

"In the mountains there is an abundance of rhinoceroses; the king is in the habit of sending men to hunt them, and the horns are brought to China as tribute, together with that of Sumatra."

LAMBRI.

YING-YAI SHÊNG-LAN (1416).

"The country of Lambri* is situated due west of Sumatra, at a distance of three days, sailing with a fair wind; it lies near the sea, and has a population of only about a thousand families. The inhabitants are all Mahommedans, and very good people. On the east the country is bordered by Litai, on the west and the north by the sea, and on the south by high mountains, at the south of which is the sea again.

"The king is also a Mahommedan; his house is built high from the ground, on large wooden pillars forty feet long; the ground below has no enclosure, and cows, goats, and other domestic animals freely live there, whilst above, a flooring and rooms are made with boards; it is very neat and clean, and he lives altogether in the upper part. The houses of the people are the same as in Sumatra.

"In this country, cows, buffaloes, goats, fowls, ducks, vegetables and rice, are all scarce, but fish and shrimps are very cheap.

"They use copper cash, and the mountains produce the fragrant wood called *chiang-chin-hsiang*.† There are also white lotuses and rhinoceroses.

"At the north-west of this country, in the sea, at a distance of half a-day, is a flat mountain, called the Hat-island;‡ the sea at the west of it is the great ocean, and is called the Ocean of Lambri.§ Ships coming from the west all take this island as a land-mark. Around this island, where the water is about twenty feet deep, sea-trees grow, which are collected by the people, and used as a valuable article of trade, it being coral. These trees grow as high as three feet; the stem is as thick as the thumb, jet black, and glossy as jade-stone; its branches are very handsome,

* 南浡利國, the country of Lam-po-li.

† 降眞香. See the description of different products in the Appendix.

‡ 帽山. § 那沒梨洋.

extending to all sides, and out of the stem cap-buttons, and other articles are made.

"About twenty to thirty families live at the foot of the mountain, every man of whom calls himself a king; if you ask a man his name, he replies, 'aku radja,'* which means: 'I am a king;' and if you put the same question to another, he gives the same answer, which is very remarkable. The island belongs to the king of Lambri.

"Whenever Chinese ships arrive at Lambri, the king avails himself of the occasion to send, as tribute to China, the fragrant wood mentioned above, and other products of his country."

HISTORY OF THE MING DYNASTY (1368—1643). Book 325.

"Lambri is situated at the west of Sumatra; with a fair wind it takes three days to go there."

(We omit a part of this account, which is only a repetition of the preceding.)

"In the year 1412 the king, Ma-ha-ra-sa,† sent envoys, together with those of Sumatra, to carry tribute; the envoys were presented with court-dresses, and the king got a seal, a commission and silks, whilst Chêng Ho was sent to carry the instructions of the emperor to that country. Till the end of the reign of the emperor Ch'êng-tsu (1424), they sent tribute every year.

"When, in 1430, Chêng Ho brought presents to different countries, Lambri was one of them."

According to the last two extracts, Lambri must have been situated at the north-western corner of the island of Sumatra, on, or near, the spot of the present Achin. We see that it was bounded by the sea on the north and the west, and that the Indian Ocean was called after this insignificant place, because it was considered to begin there. Moreover, the small island at half a-day's distance, called Hat Island, perfectly agrees with the small islands Bras or Nasi, lying off Achin, and of which the former, with its newly erected lighthouse, is a land-mark for modern navigation, just what in our text it is said to have been for the natives then. We venture to think that the much discussed situation of Marco Polo's Lambri is definitely settled herewith.[1]

The last place mentioned on this coast is the

* 阿孤剌楂, the words are Malay, and correctly translated by the author.

† 馬哈剌徉.

[1] [This view has been adopted by Van der Lith in his Notes to the *Kitáb 'Ajáib el Hind*, p. 234.]

AMBERGRIS ISLAND.*

HSING-CH'A SHÊNG-LAN (1436).

"This island has the appearance of a single mountain, and is situated in the sea of Lambri, at a distance of one day and one night from Sumatra. It rises abruptly out of the sea, which breaks on it with high waves.

"Every spring numerous dragons come together to play on this island, and they leave their spittle behind. The natives afterwards go in canoes to the spot and collect this spittle, which they take with them. If they meet with wind or rough sea, they throw themselves into the water, and, holding the boat with one hand, and beating the water with the other, they gain the shore.

"The dragon-spittle is at first like fat, of a black and yellow colour, and with a fishy smell; by length of time it contracts into large lumps, and these are also found in the belly of large fish, of the size of the Chinese peck, and also with a fishy smell. When burnt it has a pure and delicious fragrance.

"It is sold in the market of Sumatra, one tael official weight costing twelve golden coins of that country, and one cati, 192 of such pieces, equal to about 9000 Chinese copper cash, and so it is not very cheap."

This must be Pulu Rondo, to the north-north-west of Acheen.

The western coast of Sumatra has never been described in Chinese geographical literature; it seems that no trade or intercourse was carried on with it. Where it is mentioned at all, it is continually confounded, sometimes with Persia, but mostly with Arabia. The Tung Hsi Yang K'au relates the history of Mohammed as having occurred on this coast. This can only be explained by assuming that the Arabs, or Tazi, as they are called by the Chinese, have had establishments or colonies on this side of the island. Compare also note ††, on page 139.

BORNEO.

The first passage relating to this island in Chinese geographical literature is found in the

HISTORY OF T'ANG DYNASTY (618—906). Book 222b.

"Sailing from Ch'ih-t'u† towards the south-west one comes to Po-lo.‡ In the year 669 the king of this country sent an envoy,

* 龍涎嶼, lit. the Dragon-spittle Island.

† 赤土, "the red soil," a place in the gulf of Siam.

‡ 婆羅, may also be read Pa-la, or Pa-ra.

who came to court, together with the envoy of Huang-wang (Siam)."

There is, of course, not the slightest internal evidence that this passage relates to Borneo, but all Chinese geographers agree in assigning it to this island, which is designated by it up to the present day.[1] We have further no means of ascertaining which part of the island was meant, and here again the Chinese say it was the northern coast, from which they have derived their name for the whole island, just as we have taken Bruni, or Brunei, for the same purpose.

It seems that, subsequently, the Chinese have had little or no intercourse with Borneo or its inhabitants; the name of Po-lo, at least, disappears, and the northern coast of Borneo is not mentioned again before the time of the Ming dynasty, when we find it under its present name of

BRUNEI.*

TUNG HSI YANG K'AU (1618). Book V.

"Brunei is the same as Po-lo; it is the last land of the eastern ocean, and the beginning of the western sea. In the year 669 the king sent envoys to court, together with those of Huan-wang (Siam), but intercourse has since ceased for a long time.

"In the year 1406, the king sent his minister to the court, with a tribute of products of the country. The emperor made presents of embroidered silk to the king and his wife.

"It is said that the present king is a man from Fukien, who followed Chêng Ho when he went to this country, and who settled there; for this reason there is a stone, with a Chinese inscription, near the king's palace.

"In former years this country had been attacked by the Portuguese; the people retired into the interior and threw poison into the river, which, floating down with the current, killed a large number of their enemies; on this they went away and attacked Manilla.

"Formerly their city had a stone wall and a wooden wall; the stone wall was demolished in order to fill up the island Ch'ang-yau† and shut out the sea; the wooden wall exists until now.

"The king shaves his head and wraps around it a cloth embroidered with gold; he has two swords at his side, and when he goes out he walks, and is followed by 200 men. His relatives

[1] [See also d'Hervey de St. Denys, l. l., p. 460.]

* 文萊, Bun-lai.

† 長腰嶼, lit. the Long-loined Island, perhaps Pulu Muara before the Brunei river.

are called Pangeran,* and are only second in rank to the king himself.

"The king has a golden seal, weighing sixteen taels; on the seal are Chinese seal-characters, and on the top is the image of an animal; it is said to be a present from the time of Yung-lo (1403—1424). When the natives marry, they ask for an impression of this seal on their backs. I fear, however, that it is only represented as a present from the emperor, in order to impress the people, but that it has not come from China at all.

"In their temples they always sacrifice living animals.

"The people are not allowed to eat pork; who does so is punished with death.

"In this country are the Mau-su,† who go to all places as pirates; half of the goods, and the men they bring back with them, is given to the king.

"In this country there is a temple‡ in which three men are worshipped as deities, who were superintendents of public works, and of the treasury, at the time the country was founded; they fell in battle, and were buried together on this spot; a temple was erected over their tomb, and when a merchant vessel arrives, it must kill a cow or roast fowls, and offer at the same time melati and other flowers; if any man in the ship does not worship he becomes ill. When the people of the country go out trading, they make an offering of flowers, and when they come back, having made profit, they take two cocks, to whose feet they attach knives, and let them fight before the tomb; if one of these fowls is killed they thank the deities for it, which is certainly very curious.

"The trade is carried on in the following way:—When a Chinese ship arrives presents are sent in to the king. The trade is superintended by a head-writer, a second writer, a head-assistant, a second assistant, a functionary for the weights and measures, etc. It is very difficult to get out of the river, and it is necessary to do so with spring tides; sometimes, before the trading transactions are finished, the ships have to go out first and wait outside."

We know that the work, from which this account has been taken, was published in 1618, but the materials used in composing it must partly have been written at a much earlier date. So, for instance, the story of the Chinese, who is said to have gone there in the beginning of the 15th century, and who was still

* 邦奇蘭, Pang-ki-lan. In our days all the relatives of the king in Brunei have this same title.

† 毛思, this was, at the time, the common name of the Chinese for the Borneo pirates, but we are not able to find out the origin.

‡ This temple is called 浮納招廟, the temple Fow-na-chiau.

reigning there as king. We cannot say whether this story is true or not, but it seems that at one time a large number of Chinese had emigrated into this country; native tradition at least says so, and there is a Dayak tribe in the interior who claim to be descendants of Chinese.

The history of the Ming Dynasty has also an account of Brunei which, being only a repetition of what we translated just now, may safely be omitted.

SULU.*

HISTORY OF THE MING DYNASTY (1368—1643). Book 325.

"The country of Sulu is situated near Puni (the western coast of Borneo) and Java. Shortly after the year 1368 they attacked Puni, where they made a large booty, and only retired when Java came with soldiers to assist this country.

"In the year 1417 the eastern king of this country, Paduka Pa-ha-la, † the western king, Ma-ha-la-ch'ih,‡ and the king of the Mountain of Ka-la-ba-ting,§ called Paduka Prabu,|| brought their families and their chiefs, altogether more than 340 persons, and came over the sea to court, in order to carry tribute. They presented a letter of gold, with the characters engraved upon it, and offered pearls, precious stones, tortoise-shell and other articles. They were treated as those of Malacca, and after some time they were each appointed king of their country, and presented with a seal, a commission, a complete court-dress, a cap, a girdle, a horse with trappings, insignia of their rank, and other things; their followers also got caps and girdles according to their rank. The three kings remained twenty-seven days, and when they were about to return, each of them got a girdle adorned with precious stones, a hundred taels of gold, two thousand taels of silver, two hundred pieces of gauze and silk with patterns, three hundred pieces of plain silk, ten thousand taels in paper-money,¶ two thousand strings of cash, one robe embroidered with golden snakes, one with dragons, and one with kilins.

"The eastern king died in the government hotel at Tê-chou;* the emperor sent an officer to perform sacrifices, and ordered

* 蘇禄.

† 巴都葛叭哈剌, Pa-tu-ka-pa-ha-la.

‡ 麻哈剌吃, probably Maharaja.

§ 葛剌麻丁峒, probably the mountain Klaibatangan, on the north-eastern coast of Borneo.

|| 巴都葛巴剌卜. Pa-tu-ka Pa-la-pu.

¶ 鈔萬錠.

* 德州, on the Grand Canal in the north of the province of Shan-tung.

the authorities to provide the funeral and to arrange the tomb. He got a posthumous title, and his wife and concubines remained, with eighteen followers, to take care of the grave; when they had finished the three years' mourning, they were sent back to their country, and the emperor sent at the same time an envoy with a letter to the late king's eldest son, Tu-ma-han;* the letter was of the following contents: 'Your father knew to honour the Middle Country, and he came himself, with his family and his officers, to the court, across ten thousand miles of sea; I appreciated his sincerity and appointed him king, treated him with kindness, and sent officers to escort him back, but when the boat had arrived at Tê-chou he became ill and died. When I heard this I was very sorry; I ordered a burial and sacrifices according to the rules, and as you are the eldest son of his first wife, the people of the country belong to you, and it is fit that you should succeed him, in order to satisfy the people. I therefore appoint you eastern king of Sulu; you must more and more cultivate your feelings of loyalty, and respectfully follow the way prescribed by Heaven, to assist my loving disposition, and continue the intentions of your father. Respect this.'

"In the year 1420 the western king sent an envoy to bring tribute.

"In the year 1421 the mother of the eastern king sent to court a brother of her late husband, called Paduka Suli;† he presented as tribute a large pearl, weighing more then seven taels.

"In the year 1423 the concubine of the late eastern king returned to her country; she was sent away with liberal presents. The next year they sent tribute again, but did not come any more afterwards.

"During the period Wan-li (1573—1619) the Franks attacked them many times, but as their towns were naturally fortified by mountains, they could not subdue them.

"We have no information about this country in former times.

"The soil is poor, and rice and barley are not abundant; the people all eat fish and shrimps; they make salt by boiling sea-water, and wine by fermenting the juice of the sugar-cane; the outer fibres of the bamboo are woven into cloth. The weather is always hot.

"There is a pond with pearls in it, and at night their light is seen on the surface of the water; the natives sell pearls to the Chinese, and on the large ones enormous profits are made. When the (Chinese) merchant vessels leave, a few of their men are detained as hostages for their coming back again.

"Near Sulu there is a country called Kau-yoh, from where tortoise-shell comes."

* 都馬含.　　† 叭都加蘇里.

In addition to the above article we find the following in the

TUNG HSI YANG K'AU (1618). Book V.

"Of the three kings who came to China in 1417, the eastern king is the first, the western king the second, and the king of the Mountain the third.

"Merchant vessels which have been there speak of a city lying on a high steep mountain, this is probably the capital of the king of the mountain (Klaibatangan).

"Trade is carried on in the following way:—When a ship arrives there natives take all the goods and carry them for sale into the interior, whilst they sell also to the neighbouring countries, and when they come back, the native articles are delivered to our merchants as payment. When many pearls have been found during a year, and our traders get large ones, they make a profit of many hundred per cent.; but even if there are only a few pearls, still a profit of a hundred per cent. is made.

"The natives are always afraid that our ships will not come there, and whenever a ship leaves they detain some men as hostages, to make sure that the ship will call again."

The above accounts of Sulu do not require any further explanation; it only deserves attention that, whilst Brunei is called the country of the pirates on page 224, this accusation is not at all brought against those of Sulu, who in later days have become so notorious on this account; their attack on the west coast of Borneo however, mentioned on page 225, looks much like a piratical expedition.

From the sailing directions given in the "Tung Hsi Yang K'au," it seems that Chinese vessels going to Sulu first went over to the Philippines, and made the voyage along the different islands of that group.

BANJERMASIN.*

HISTORY OF THE MING DYNASTY (1368—1643). Book 323.

"At Banjermasin they have a city with walls of wood, one side of which lies against a mountain. The chief of this country keeps several hundreds of finely dressed girls, and when he goes out he rides on an elephant, and is followed by these girls carrying his clothes, shoes, knife, sword and betel-tray; if he goes in a boat he sits cross-legged on a couch, and these girls sit on both sides with their faces turned towards

* 文郎馬神

him, or are employed in poling the boat; his state is always very great.

"Many of the people make rafts of trees bound together, and build houses on the water, in which they live, just as it is done at Palembang.

"Men and women use a piece of cloth, with many colours, for wrapping round their head; their back and breast are generally bare, but sometimes they have a jacket with short sleeves, which they put on over their heads; the lower part of their body is covered with a piece of cloth. Formerly they used plantain-leaves as plates, but since they trade with the Chinese, they have gradually begun to use earthenware. They also very much like earthen jars with dragons outside; when they die they are put into such a jar and buried in this way.

"They detest adultery, and he who commits it is punished with death; when a Chinese has intercourse with one of their girls they cut off his hair, and give him the girl as a wife, never allowing him to return to his country.

"Far in the interior there is a village called Wu-lung-li-tan,* where the people all have tails; when they see other men they cover their face with their hands and run away; their country is rich in gold-dust, and when merchants carry goods there to trade with them, they give a sign by beating a small copper drum (gong), lay their goods down upon the ground, and step back about ten feet. These people then come forward, and when they see something which suits their fancy, they put some gold at the side of it; if the owner tells them from his distance that he is prepared to sell it at that price, they take up the article and go away, if not, they collect their gold again and go home, without talking any further with each other.

"The products of the country are rhinoceros-horns, peacocks, parrots, gold-dust, crane-crests, wax, rattan-mats, chillies, dragon's-blood, nutmegs, deer-hides, and so on.

"In the neighbourhood are the Beajoos,† who are of a ferocious disposition, and go out in the middle of the night to cut off people's heads, which they carry away and adorn with gold; therefore the traders fear them very much, and at night carefully mount guard to await them.

"The last king of Banjermasin was a good man, who treated the merchants very favourably; he had thirty-one sons, and fearing that they might molest the merchant vessels, he did not allow them to go out. His wife was the daughter of a Beajoo chieftain,

* 烏龍里憚, O-lang-li-tan, according to the Fukien pronunciation.

† 買哇柔, Be-oa-dziu, according to the Fukien pronunciation. A large tribe of Dayaks (aborigines) in the interior.

and a son of hers succeeded his father; this man listened to the words of his mother's relatives, began to oppress the trade, and owed much money to the traders, which he never paid. After this the number of those who visited the country gradually diminished."

"The Tung Hsi Yang K'au (1618)." Book iv. fol. 20, adds to this:—

"The women in this country come in small sampans to the ships, in order to sell articles of food, but the trade is carried on by the men. In their trade they use coins of lead."

The western coast of Borneo has been known to the Chinese under the name of Pu-ni,* a name of which we have not been able to find cut the origin. It seems to have been visited earlier than the north coast, and the voyage to it was made via Java.

PUNI, OR THE WEST COAST OF BORNEO.

HISTORY OF THE SUNG-DYNASTY (960—1279). Book 489.

"This country is situated in the south-western sea; its distance from Java is 45 days, from San-bo-tsai (Palembang) 40 days, and from Champa 30 days, in all cases taking the wind to be fair.

"There is a town of which the walls are made of boards, and in this town live more than 10,000 souls; it rules over fourteen different places. The house in which the king lives is covered with palm-leaves, and the cottages of the people are covered with grass.

"Those who are about the king are his ministers. The king sits on a couch made of cords, and when he goes out he sits on a large piece of cloth (a hammock), and is carried by a number of men. When they fight, they carry swords and wear armour; this armour is of cast copper, and resembles in shape a large tube, which they put over their body, to protect their front and their back.

"In this country there is no barley, but they have hemp and rice; they have also goats, fowls and fish. There are no silkworms, and they use cotton† instead, of which they weave cloth. They drink wine made of the cocoa-nut-tree. For their marriage presents they first send this cocoa-nut-tree wine, then they send areca-nuts, and next a finger-ring; at last they send some cotton-cloth, or weigh out some gold or silver, by which the ceremonies are concluded.

"For the dead they use also coffins, and make a kind of carriage, on which they bring the body to the wilderness, and expose it there; in the second month, when they begin their agricultural

* 勃泥 or 浡泥. † 吉貝.

labours, they sacrifice to the deceased, and do this for seven years, after which time they cease to do so.

"The seventh day of the twelfth month is their new year. The climate is hot, and there is much wind and rain.

"When the people of this country have a feast, they make music by beating drums, blowing flutes, and clashing cymbals; they also sing and dance. They have no crockery, but use bamboos and palm-leaves for cooking and serving their rice; when they have finished eating they throw them away.

"In former times they never went to the court of China, therefore no mention is made of them in the histories.

"In the year 977, their king, Hiang-ta,* sent three envoys to bring as tribute, one cati,† camphor,‡ in large pieces, eight caties camphor of the second sort, eleven caties of the third sort, twenty caties small grained camphor,§ and twenty caties of the last sort, one cati being equal to twenty taels Chinese weight (about 0.8 kilogram). They further brought five boards of camphor-wood, a hundred tortoise-shells, three trays of sandal-wood, and six elephant-tusks.[1]

"These articles were presented with the following words: 'May the emperor live thousands, and ten thousands of years, and may he not disapprove of the poor civilities of my little country.'

"The letter was enclosed in different small bags, which were sealed, and it was not written on Chinese paper, but on what looked like very thin bark of a tree; it was glossy, slightly green, several feet long, and somewhat broader than one inch, and rolled up so tightly that it could be taken within the hand. The characters in which it was written were small, and had to be read horizontally; translated into Chinese it ran as follows: 'The king of Pu-ni, called Hiang-ta, prostrates himself before the most august emperor, and hopes that the emperor may live ten thousands of years. I have now sent envoys to carry tribute; I knew before that there was an emperor, but I had no means of communication. Recently, there was a merchant called P'u Lu-hsieh,|| whose ship arrived at the mouth of my river; I sent a man to invite him to my place, and then he told me that he came from China. The people of my country were much delighted at this, and preparing a ship, asked this stranger to guide them to the court. The envoys I have sent, only wish to see your Majesty in peace, and I intend to send people with tribute every year. But when I do so I fear that my ships may occasionally be blown

* 向打. † 家底.

‡ 龍腦. § 米龍腦 or 米腦.

[1] [See also Ma-tuan-lin's account, l. l., p. 569.]

|| 蒲盧歇.

to Champa, and I therefore hope your Majesty will send an edict to that country with orders that, if a ship of Hiang-ta arrives there, it must not be detained. My country has no other articles, and I pray your Majesty not to be angry with me.'

"These were the contents of his letter; the emperor ordered his envoys to be lodged in the hall for treating guests, and they were sent away with presents.

"In the second month of the year 1082, their king, Sri Ma-ja,* again sent an envoy to bring as tribute products of the country; this envoy asked permission to embark at Ch'üan-chou,† on his homeward voyage, which was granted to him."

History of the Ming Dynasty (1368—1643). Book 325.

"Pu-ni‡ came to China for the first time in the reign of the emperor T'ai-tsung, of the Sung-dynasty (976—997).

"In the 8th month of the year 1370, the emperor sent two officers to go abroad as envoys; they left Ch'üan-chou in a ship, arrived at Java after half a year, and in a month more they came to this country. The king, called Maha Mosa,§ was haughty, and did not show them any politeness, but one of the envoys reproved him, and then he came down from his seat, bowed down, and received the imperial orders. At that time the country had been plundered by those of Sulu, so that it was weak and poor, and the king excused himself on this account, asking permission to bring tribute after three years; but one of the envoys pointed out to him the magnitude of his duty, and then the king assented.

"Now this country had hitherto belonged to Java, and the people of the latter country tried to prevent him; the king was wavering in his decision, but the envoy remonstrated with him, saying: 'Java has already a long time acknowleged itself a subject, and brought tribute; why do you only fear Java, and not the Celestial Court?' The king then appointed envoys to bring a letter, and to carry as tribute crane-crests, living tortoises, peacocks, camphor-baros in small lumps, camphor in powder, cloth from the west,|| and various sorts of incense. In the 8th month of the next year, they followed the Chinese envoys, and came to court. The letter consisted of a sheet of gold, the characters were of silver,

* 錫理麻喏, I am inclined to consider the two last characters as a mutilation of 麻合刺喏, and the whole name would then be Sri Maharaja.

† 泉州. ‡ 浡泥. § 馬合謨沙.

|| 西洋布, we have no means to ascertain what kind of cloth is meant here.

and resembled those of the country Hui-ku;* they were all engraved. The emperor was much pleased, treated them, and gave them presents in the most liberal way.

"In the year 1375 the emperor ordered that the mountains and the streams of this country should be included in the sacrifices to the mountains and streams of the province of Fukien.

"In the winter of the year 1405, the king, Maraja Ka-la,† sent envoys to bring tribute, and the emperor sent functionaries to invest him as king of the country, and gave him a seal, a commission, and silks of various colours. The king was greatly delighted, and, embarking with his wife, his younger brothers and sisters, his sons, daughters, and functionaries, went to court. He arrived in Fukien, and the governor reported his arrival, on which a eunuch was sent to receive him; he was feasted in every place he passed, and in the eighth month of the year 1408, he arrived at the capital and had an audience with the emperor. The emperor praised him, and the king, kneeling down, pronounced the following address: 'Your Majesty has received the precious mandate of Heaven, and rules over the whole world; though I live far away on an island in the sea, I have enjoyed your favour, and been presented with an investiture and a title; since that time the rain and the seasons have been favourable in my country, every year has been abundant, and my people were free from calamities; in mountains and rivers all kinds of precious and rare things came to the light; plants and trees, birds and beasts, multiplied rapidly, and the old men in my country all said that this was caused by the protection of the holy emperor. I wished to see the face of the sun, and to give proof of my sincerity; regardless of the dangers of a long voyage I have come with my family and my ministers, to present my thanks personally.'

"The emperor addressed him repeatedly in the most kind and laudatory way, and gave orders that the letter to the empress, and the articles which the king's wife had brought, should be laid out in one of the halls of the palace. The king went to this hall and entered to present them, and when this was done, the king, his wife, and the others were presented with caps, girdles, and suits of clothes. After this the king was entertained at the Fêng-t'ian-mên, and his wife, with her suite, in another place, which being finished, they were escorted back to where they resided.

"The Masters of Ceremonies asked instructions about the ceremonies for the king's visit to the princes of the blood, and the

* 回鶻, this country has not been identified. [The Hui-ku writing was probably the Ouigur. See M. d'Hervey de St. Denys's note, l. l., p. 205.]

† 麻那惹加那, the second character is generally pronounced *na*, but in many dialects it is *la*, and used for the transcription of the foreign sound *ra*, and sometimes for *da*.

emperor ordered that he should be allowed to adopt the same forms as a noble of the first rank.

"After some time the emperor gave to the king different insignia, a chair, silver utensils, umbrellas, fans, horses, and saddles inlaid with gold, and ten suits of dresses, made of different kinds of silk with flowers, and embroidered with gold. His retinue got presents, each according to his rank.

"In the tenth month the king died at his residence; the emperor was very much grieved, closed his court for three days and sent an officer to perform sacrifices, and to give the silk required for the funeral. The heir-apparent, and the imperial princes, also sent officers to perform sacrifices, and when the coffin and other necessaries of the burial had been prepared by these officers, they buried him on the Stone hill outside the An-tê gate,* where a tombstone was erected, and the grave arranged as for a great personage. They also erected a temple at the side of the grave, where every spring and autumn an officer sacrificed a goat. The posthumous name, Kung-shun,† 'Reverent and dutiful,' was given to him.

"The emperor issued an edict to console his son, Hia-wang,‡ who was ordered to succeed his father, and appointed king of the country. Hia-wang and his uncle reported that their country had to give Java forty caties camphor-baros every year, and begged an imperial order to Java that this annual tribute should be stopped, in order that it might be sent to the imperial court instead; they further said that, as they were going home now, they asked for the emperor's orders, and for permission to remain at home a year, in order to satisfy the wishes of the people; at last they requested that the time for bringing tribute, and the number of persons who were to accompany it, might be fixed.

"The emperor acceded to all these wishes; he ordered that tribute should be sent once in three years, and that the number of persons coming with it should depend on the king's pleasure. He also gave an order to Java, telling them not to ask any more the annual tribute of this country.

"When the king took his leave he was presented with a girdle adorned with precious stones, a hundred ounces of gold, three thousand ounces of silver, paper-money, embroidered silks, gauze, coverlets, mattrasses, mosquito-curtains, and other furniture. His followers also got presents, and the eunuch, Chang Ch'ien, and the messenger, Chau Hang, were sent to escort him.

"Formerly the late king had made representation to the effect that, having got a title by favour of the emperor, and his country now being altogether subject to the imperial government, he begged that the mountain range at the back of his kingdom

* 安德門外石子岡. † 恭順. ‡ 遐旺.

might be made a guard to his country. The new king preferred the same request, and so it was called 'The mountain of lasting tranquillity, preserving the country.'* The emperor wrote an inscription for a stone, which he ordered Chang Ch'ien and his party to erect on the top of it."

(This inscription contains an eulogy on the deceased king, and the ordinary extollation of China, and its civilizing influence over the barbarians, of which we have had more than enough already. As it has no allusions useful for our purpose, we may spare ourselves the trouble of translating, and our readers of wading through it).

"In the ninth month of the year 1410, Chang Ch'ien and his party returned to China, and the king sent envoys with them, in order to carry tribute, and to present thanks for the imperial favours.

"The next year Chang Ch'ien was sent again to present the king with flowered silk, silk-gauze, and silk of various colours, altogether one hundred and twenty pieces; his functionaries also got presents.

"In the ninth month of the year 1412, Hia-wang came to court with his mother. The emperor gave orders to the officers of the Board of Rites to lodge them in one of the imperial pavilions, and to provide for all their meals. The day after their arrival the emperor entertained the king at the Fêng-t'ien gate, and the mother of the king was also entertained. After two days this was repeated, and on this occasion the king was presented with a cap, a girdle, and a suit of clothes, whilst the king's mother, his uncle, and the rest, all got presents according to their rank. In the second month of the next year the king took his leave, when the emperor bestowed on him a hundred ounces of gold, five hundred ounces of silver, paper-money to the value of 3000 taels, 1500 strings of cash, four pieces of flowered silk, eighteen pieces of other silk, three dresses of different kinds of silk, coverlets, mattrasses, mosquito-curtains and other furniture, all complete.

"From the year 1415 to the year 1425 they brought tribute four times, but after that time their tribute-bearers became more rare.

"In the year 1530 one of the functionaries in the capital addressed a memorial to the emperor, stating that Siam, Champa, Liukiu, Java en Pu-ni (west coast of Borneo), when bringing tribute, all came by Tung-kwan,† and as often merchants had joined themselves to them in a clandestine way (which had been objected to by the Chinese authorities), their tribute had been

* 長寧鎮國之山.

† 東莞, a place a little to the east of Canton.

discontinued for the greater part. In addition to this, during the period Chêng-tê (1506—1521), the Franks (Portuguese) had been violently spreading their bad influence, and then the tribute had ceased altogether; a few years afterwards the natives had tried to begin again, but it was evident that the regard for the Chinese empire had suffered very much.

"This memorial was sent to the Censorate, which requested the emperor to keep the old rules and not to allow any departure from them.

"During the period Wan-li (1573—1619) the king of Pu-ni died without posterity; his relatives fought for the throne and there was a great war in the country; at last all competitors were killed and then a daughter of the late king was put on the throne. At that time there was a man from Chang-chou in Fukien of the family Chang, who had before been made a datu* in that country, which means in Chinese a high officer; he had fled on account of those troubles, but when the queen came to the throne she called him back. The daughter of this man had free access to the palace, but her mind became insane and she falsely told that her father intended to revolt. The queen, hearing this, became afraid and sent people to take informations from those of his household; the datu killed himself and as the people of the country asserted that he had been unjustly prosecuted, the queen felt great remorse; she caused his daughter to be strangled and made his son an officer.

"Since this time, though they did not bring any more tribute, the intercourse by traders was uninterrupted.

"The country consists of fourteen different places, and is situated at the east of Palembang; from Champa one can arrive there in forty days.†

"The customs and products of the country have been described in the history of the Sung dynasty."

The above account shows that the relations between China and the western coast of Borneo have been rather intimate at one time, but nevertheless, the description of the country is very hazy and gives us no clue for determining the locality. The Chinese have been puzzled by it too, and have frequently confounded it

* 那督 la-tu, for the Malay word datu, a title much used amongst them.

† We here omit a few details applying to Patani, on the coast of Malacca, which place is confounded with the subject of this article. This mistake is owing to the peculiar liberties the Chinese take in writing the names of places. They like to reduce them to one syllable, and accordingly they often write *Pa* instead of Ka-la-pa (Batavia), *Lat* instead of Si-lat (Singapore), *Ni* instead of Pu-ni. Patani is called Ta-ni by them, but as the character used for the transcription of the syllable *Ta*, has originally the meaning of *great*, the author has taken it in the latter sense and read *Great Ni*, which he considered identical with Pu-ni.

with Ta-ni (Patani on the coast of Malacca); we saw our author make this mistake just now, and we find the same error committed in the Tung Hsi Yang K'au, where the accounts of these two countries are hopelessly mixed together.

The last item we have to treat of under the head of Borneo are the

KARIMATA-ISLANDS.

HSING-CH'A SHÊNG-LAN (1436).

"Karimata,* lies opposite to Kau-lan (Billiton); it is an island in the sea, and has a long range of mountains. They use the water from the mountains to irrigate their fields, but their rice is not very abundant.

"The weather is always warm. Their manners and customs are rather bad. The men shave their heads, wear a short jacket of bamboo-cloth, and a kilted sarong. They plant bananas, and eat the fruit instead of rice. They make salt out of sea-water, and wine from the sugar-cane.

"Products of the country are tortoise-shell and antelopes. Articles of import are Java-cloth, glass-beads, calico printed with flowers, rice, etc."

EASTERN PART OF THE ARCHIPELAGO.

The eastern part of the archipelago seems to have been little visited by the Chinese, and their accounts of it are even more scanty than the rest, and comparatively recent. They only mention Timor and the Moluccos.

TIMOR.

HSING-CH'A SHÊNG-LAN (1436).

"Kih-ri Ti-mun,† is situated at the east of Tiong-ka-lo (Madura, v. p. 182); the mountains are covered with sandal-trees, and the country produces nothing else.

"There are twelve ports or mercantile establishments, each under a chief.

"The fields are rich and abundant; the weather is warm during daytime, and cool at night.

* 假里馬丁, Ka-ri-ma-tang; the text has Ka-ma-ri-tang, but this is evidently a mistake. The islands are mentioned in the History of the Yüan dynasty, under the name of 假里馬荅 Ka-ri-ma-ta (v. p. 151).

† 吉里地悶, the last two characters are used for Timor up to the present day, but we do not know what is meant by the prefix Kri or Kiri.

"Men and women cut their hair and wear a short dress; whilst sleeping at night they do not cover themselves.

"When merchant-vessels arrive there, the women come on board to trade, and many men get infected with disease; from those who get ill, eight or nine out of ten die, which is caused by the unhealthiness of the country, and their secret diseases.

"Articles of import are gold, silver, iron and earthenware, etc."

TUNG HSI YANG K'AU (1618). Book IV.

"Timor is the vulgar name for Kih-ri Timor;* this country is situated at the east of Tiong-ka-lo (Madura) and is very fertile. The mountains are so covered with sandal-trees, that they cut it for firewood, and its strong smell often makes people ill. The country is very warm; about noon it is necessary to sit with the face towards the water, in order to escape illness. Men and women cut their hair and wear short dresses; when they sleep at night, they do not cover themselves.

"To stand in the presence of others is a sign of dignity, and when they see their king, they sit down on the ground with folded hands. They have no family-names, and do not know the times of the year. They are also without writing; when they want to record something, they do it with flat stones, and a thousand stones are represented by a string. They have chiefs to whom, when they have disputes, each party brings a goat; he who is wrong loses his goat, and the other takes his away again. The old Chinese practice of reckoning with knotted strings and bundled arrows, is thus preserved in these distant islands.

"The market-place is some distance from the town, and whenever a merchant-vessel has arrived, the king comes down from the town, accompanied by his wife and children, his concubines and servants, his suite being rather numerous. Taxes have to be paid daily, but they are not very heavy. The natives continually bring sandal-wood for bartering with the merchants, but they may not come when the king is not present, for fear of disturbances. Therefore the king is always requested to come first."

MOLUCCOS.

The first time we have found these islands mentioned by Chinese geographers, has been in the History of the T'ang-dynasty (618—906), where they are introduced under the name of Mi-li-kü, to determine the position of the island of Bali (v. p. 183). No special description however is given, and we do not hear of them again before the 16th century.[1]

* 遲悶者吉里地門之訛也.

1 [Ma-tuan-lin, l. l., pp. 522—31.]

History of the Ming Dynasty (1368—1643). Book 323.

"The Moluccos* are situated in the south-eastern ocean, and have a reputation of being wealthy. When their chief goes out he has a great state, and his subjects, who meet him, lie down at the side of the road with folded hands.

"There is an incense-mountain, and when it has rained, the incense falls down and covers the ground in such quantities, that the people cannot collect it all.† Their chief stores up large quantities, in order to sell it to the merchant-vessels that visit this place. It is the only country in the eastern sea which produces cloves, which are useful for dispelling bad humours, and therefore Chinese merchants go in large numbers to trade there.

"During the period Wan-li (1573—1619) the Franks (Portuguese) came to attack this country; the chief was overcome in battle, and offered his submission, on which they pardoned him and put him again on the throne; they imposed an annual tribute of cloves, and then went away, without leaving soldiers in charge of the place.

"Afterwards the Dutch (red-haired barbarians) came across the sea, and knowing that the Portuguese had gone away, availed themselves of the occasion and went to the town, where they took the chief and said to him: 'If you serve us well, we will be your masters, and we can beat the Portuguese.' The chief had no choice, he obeyed and continued to govern his country.

"When the Portuguese heard this, they became very angry, and collected soldiers to attack them, but these were killed on their way by the Chinese, as is told in the history of Manila. The Dutch now, though they kept the Moluccos, went away every year or every two years and then came back again. In the meantime, the son of the Portuguese chief had succeeded his father; he wanted to carry out his plans, and came with a large force for this purpose. Now it happened that the Dutch were absent at that time, so he conquered the Moluccos, killed the chief, and put a man on the throne whom he trusted. Not long afterwards the Dutch came again, they also took the town, drove away the chief who had been put up by the Portuguese, and raised to the throne the son of the former chief. After this time they fought every year, and many people were killed, till the Chinese who lived there talked to both sides, advising them to stop fighting, and rather to divide the country; on this, the high mountain of Banda‡ was taken as

* 美洛居.

† We have seen this story somewhere else, where it was clear that cloves were meant.

‡ 萬老高山.

boundary, the north of this mountain going to the Dutch, and the south to the Portuguese; it became a little more quiet now, and the Moluccos remained divided between the two countries."

Tung Hsi Yang K'au (1618). Book V.

"The Moluccos* are a rich and fertile country in the eastern ocean. When their chief goes out, he has a great state and his people kneel down on both sides of the road with folded hands. The men shave their hair and the women wear it in a knot behind the head.

"When a girl marries, they buy large quantities of Chinese cups, which they paint outside; rich people buy many hundreds to show their wealth.

"When they have a feast, they put down two large bowls with wine, and every two men have a cup, which they dip into it and so drink; the full-grown men rise up and perform a native dance, whilst the young men stand around looking at it, but do not venture to enter the circle."

In the above accounts the Moluccos are taken as a whole, and it is not stated in what special part the king or chief lived; we may take it for granted, however, that the king of Ternate was meant, whom we know to have been the most powerful chief in those parts when the Europeans first arrived there, and whose capital has been the theatre where many fights between Spaniards, Portuguese, and Dutch have been fought.

The Malay Peninsula.

TUN-SUN.†

History of the Liang Dynasty (502—556). Book 54.

"More than 3000 *li* to the south of Fu-nan ‡ (Siam), there is the country of Tun-sun; it is situated on a peninsula, more than a thousand *li* in extent, and the capital is ten *li* (about three miles) away from the sea. There are five kings, who all acknowledge the supremacy of Siam.

"The eastern frontier of Tun-sun, extends as far as Kiau-chou, § and on the west it borders on India.|| The different countries beyond the Ganges ¶ all come to trade here, the reason of this being that if from Tun-sun you put out to sea for more than 1000 *li*, you still have a vast ocean before you, which no ship has ever

* 美洛居俗訛爲米六合. † 頓遜.
‡ 扶南. § 交州? || 天竺. ¶ 安息.

been able to cross.* To its market, people come from east and west, and it is visited daily by more than 10,000 men. All kinds of valuable goods are found here.

"In this country a wine-tree is found; the people collect the juice of its flowers and let it stand in a jar, when it becomes wine in a few days."

In the Dynastic Histories we find no later account of this country, but we meet again with the same name in book 276 of the T'ai-p'ing Hoan-yü Chi, a universal geography published between the years 976 and 983, in which the notices on foreign countries generally are inaccurate repetitions of the articles on the same subject in the histories of the preceding dynasties; in this case, however, some new material is added and we think therefore we may translate this part of its account.

"Tun-sun † was first heard of in the Liang dynasty; it is also called Tien-sun." ‡

(Here follows a repetition of the preceding account, which is accordingly omitted.)

"It produces the Hwo-hsiang; § if you take a branch of this plant and put it into the ground, it lives again. The leaves serve to make clothes.

"In this country there are more than ten different kinds of fragrant flowers, which come during the whole year, and every day many waggon-loads are collected in order to sell them. When dried they are still more fragrant, and their offal is made into powder for rubbing the body.

"According to their custom the dead are generally devoured by birds. When one is on the point of dying, his relatives, singing and dancing, bring him out of the town, when birds like geese, with bills like parrots and of a red colour, arrive in large quantities; the relatives then retire, and when the body has been devoured entirely, they take the bones, burn them, and sink the ashes into the sea; the deceased is then considered to have been a virtuous man, who will certainly be reborn in heaven. When the birds fly away without eating him, the dying man is much afflicted that he is so impure, and is buried by voluntarily throwing him-

* This passage is not very clear, and seems to have become corrupted. We shall try to explain it at the end of this account. [The passage as quoted by Ma-tuan-lin has been tentatively translated by M. d'Hervey de Saint-Denys as follows: "The reason of this is that *Tun-Sun* extends more than a thousand *li* out to sea, and as this sea offers no available landing-place, it is not possible for vessels to pass the port of *Tun-Sun* without casting anchor there" (l. l., p. 445).]

† 頓孫. ‡ 典孫.

§ 霍香, Lophanthus rugosus, or Betonica officinalis. Vid. W. Williams' Dict. p. 257.

self into the fire; this is considered to be the next class of men. Those who cannot have themselves burned alive and neither are devoured by the birds, are considered the lowest class."

From internal evidence contained in the above accounts, as well as from the universal testimony of Chinese geographers, we have no hesitation in taking Tun-sun for a part of the Malay peninsula, but we have not been able to identify its site with any degree of certainty. We venture, however, to offer the following suggestion. Taking into consideration the difficulties and dangers of navigation in those times, it is quite natural that the intercourse between India and China was partly carried on by a route on which these sea-voyages were reduced considerably, across the narrower part of the Malay peninsula, say between 8° and 10° northern latitude, where we shall presently see that not long afterwards another emporium for this trade was established. We think that the market-place of Tun-sun was situated somewhere in this locality. The obscure passage on the preceding page would then find an explanation also. It says that the peninsula was more than a thousand *li* long, and the author, with very defective notions of geography, and seeing this overland route followed by so many, probably concluded from the great length of this country, that it was not possible for ships to find their way to the other side.

KORA OR KALA.*

New History of the T'ang Dynasty (618—906).

Book 222b.

"This country is situated at the south-east of P'an-p'an,† and is also called Kora Fu-sa-ra.‡ The king's family-name is Sri Pora,§ and his personal name is Mi-si Po-ra.|| The walls of his city are built with stones piled upon each other, whilst the watch-towers, the palace and other buildings are thatched with straw. The country is divided into 24 districts.

"The soldiers use bows, arrows, swords, lances, and armour of

* 哥羅, Kora is most likely the correct reading, but we also give Kala, because, as we shall presently see, it has been mentioned by others under this name.

† 盤盤, the southern part of Siam, probably the present P'un-p'in (Bandon).

‡ 哥羅富沙羅, probably Kora Besar or Great Kora.

§ 矢黎娑羅.

|| 米矢鉢羅. We are unable to guess what may have been the native form of the last two names.

leather; their banners are adorned with peacock feathers, and they fight mounted on elephants; one division of the army consists of a hundred of these, and each elephant is surrounded by a hundred men. On the elephant's back is a cage containing four men, armed with bows, arrows, and lances.

"As taxes the people pay a little silver. There are no silk-worms, nor hemp or flax, nothing else but cotton. For domestic animals they have numerous cows and a few ponies.

"It is their custom that only functionaries are allowed to tie up their hair and to wrap a handkerchief round their heads. When they marry, they give no other presents than areca-nuts, sometimes as many as two hundred trays. The wife enters the family of her husband.

"Their musical instruments are a kind of guitar,* a transversal flute, copper cymbals, and iron drums. Their dead are burned, the ashes put into a golden jar and sunk into the sea.

"On the south-east the country of Ku-ru-mi is situated at a distance of one month travelling across the sea. To the south lies Po-li at a distance of ten days. On the east is Pu-shu five days away, and Wan-tan† lies to the north-west at a distance of six days. The customs of the people are about the same as in Ch'ih-t'u ‡ (Siam).

"Between the years 650 and 656 this country has come to court and brought as tribute coloured parrots."

The Chinese characters, used in the transcription of the name of this country, certainly point to one original sound of Kora or Kara, as the second character, in the geographical literature, is used nearly exclusively for transcribing the syllable *ra*. In our modern maps we find the name Kora on the western coast of Malacca, in about 8° N. L., and as this would suit its position as given with respect to Sumatra and P'un-p'in, it is quite probable that this small place preserves us the name of the great emporium of former days.

We must also draw attention to a passage in the "Relation des Voyages faits par les Arabes et les Persans dans l'Inde et à la Chine dans le IXme siècle, édits par M. Reinaud. Paris, 1845," where, on page 93, the author, after having spoken of Java and Sumatra, continues as follows: "L'île de Kalah est le centre du commerce de l'aloès, du camphre, du sandal, de l'ivoire, du plomb alcaly, etc. etc. C'est là que se rendent les expéditions qui se

* 琵琶.

† 拘蔞密, 婆利, 不述, 文單. With the exception of Poli, which we have seen to be the north coast of Sumatra, we cannot identify these names.

‡ 赤土.

font de l'Oman." It seems probable that the Kora or Kara of our text is meant here, but that the author of this narrative, whose names are generally not very correct, has got this one from Chinese traders, who, having no *r* in their language, must have pronounced it Kola or Kala.[1]

MALACCA.*

YING-VAI SHÊNG-LAN (1416).

"Going due south from Champa with a fair wind, a ship comes to the strait of Lingga; entering this strait and going westward for two days, this place may be reached.

"Formerly it was not called a kingdom, but as there were five islands on the coast, it was called the five islands. There also was no king, but only a chief, the country belonging to Siam, to which they had to pay a tribute of 40 taels of gold, and if they failed to do this, they were attacked for it.

"In the year 1409 the imperial envoy, Chêng Ho, brought an order from the emperor, and gave to the chief of this country two silver seals, a cap, a girdle, and a long robe; he erected a stone, and raised the place to a city, after which the land was called the kingdom of Malacca. From this time the Siamese did not venture to molest it any more, and the chief of the country, having become king by the imperial favour, went with his wife to the court (of China) to present his thanks, and to bring a tribute of products of his country. The emperor sent him home again in a Chinese ship in order to take care of his land.

"The country is bordered on the west by the ocean, and on the east and the north by high mountains; the soil along the mountains is sandy and brackish; the temperature is hot during daytime and cool at night; the fields are not fertile and produce little rice, for which reason the people do not occupy themselves much with agriculture.

"There is a large brook passing before the residence of the king on its way to the sea; the king has made a bridge over it, on which he has constructed about twenty pavilions, in which the sale of all kinds of articles is conducted.

"The king and the people are Mahomedans, and they carefully observe the tenets of this religion.

"The king wears round his head a fine white cloth of native

[1] [Professor van der Lith, in his dissertation on *Kalah* (l. l., p. 255—63, see also Kern's Note *ib.* p. 308), has clearly established what Walckenaer and Yule had conjectured, viz. that Kalah is identical with Kădah (Kedah, Queddah).]

* 滿剌加. Man-la-ka, or, according to the Amoy pronunciation, Moa-la-ka.

cotton, and on his body a long robe of fine, flowered, green calico. His shoes are of leather, and he always goes out in a sedan-chair.

"The men of the people wrap up their head in a square piece of cotton, and the women wear their hair in a knot behind their head. They are rather dark. The lower part of their body is surrounded with a white piece of cotton, and on their back they wear a short jacket of flowered cotton.

"Their manners and customs are pure and simple. Their houses are built rather high and have no flooring of boards, but at a height of about four feet they make a floor of split up cocoa-nut-trees, which are fastened with rattan, just as if it were a sheep-sty; on this floor they spread their beds and mats, on which they sit cross-legged, whilst they also eat, sleep, and cook here.

"Many of the people live from fishing, for which purpose they go out to sea in canoes made out of a single tree.

"The country produces lignum aloes, ebony, damar,* (a kind of resin), tin, etc. Damar is the sap of a tree, from which it flows out into the ground and is obtained by digging; it comes out of the tree in drops, just as the resin of pine-trees; it burns with a flame, and the natives use it for light. When they have made a boat, they use this substance to smear it over the seams and then the water cannot get through them; much of it is collected for foreign countries. There is also a better sort, which is clear and transparent and resembles amber; this is called sun-tu-lu-s;† the natives make cap-buttons from it, which are sold by them, and are those which we call water-amber.

"Tin is found in two places of the mountains, and the king has appointed officers to control the mines. People are sent to wash it. and after it has been melted, it is cast into small blocks weighing one catti eight taels, or one catti four taels official weight; ten pieces are bound together with rattan and form a small bundle, whilst forty pieces make a large bundle. In all their trading transactions they use these pieces of tin instead of money.

"Their language, their books, and their marriage-ceremonies are nearly the same as those in Java.

"In the forest is a tree called sago, which is soaked and pounded, and the flour got in this way is made into small globes as large as green peas; these are dried in the sun and sold for food.

"On the low grounds along the sea grows a tree, of which the leaves are as long as kajang-leaves; when first shooting out they are like long knives and very flexible. The fruit have the appearance of *lichi*, and are of the size of an egg; the natives make

* 打麻兒, the Malay name for resin. This same resin is still obtained and used in the same way.

† 損都盧厮.

wine of them, which is called kajang-wine and has the power of intoxicating. The natives also take these leaves and with bamboo make fine mats of them, only two feet broad and more than ten feet long, which they offer for sale.*

"They have sugar-cane, plantains, nangka (jack-fruit), wild *lichis*, etc. Their vegetables are onions, ginger, leek, mustard, gourds, and melons. Cattle, goats, fowls, and ducks are found, but in small numbers, and their price is therefore very dear, one buffalo costing a catty of silver; they have no donkeys or horses.

"In the sea along the coast are found turtles and dragons, which attack men (alligators). The dragon is three or four feet high, has four legs and its whole body covered with scales, a crest of points on its back, a head like a dragon and protruding teeth. When it meets with men it devours them.

"In the mountains is a yellow tiger, a little smaller than the yellow tiger in China; there is also a black tiger and a yellow one with dark spots.

"Sometimes there is a kind of tiger which assumes a human shape, comes to the town, and goes among the people; when it is recognized it is caught and killed.

"The place is visited by Chinese merchant-vessels; whenever these come a barrier is made (for the purpose of collecting tolls).

"In the city-wall are four gates, provided with watch and drum-towers; at night they patrol, ringing a kind of small bell. Inside their walls they have a second fortress of palissades, where godowns have been made, and all the money and provisions are stowed away here.

"When the government ships (of the mission to which the author belonged) were on their home voyage, they visited this place, as well to repair as to load native products; they waited here for a favourable south wind, and in the middle of the fifth month they put to sea on their voyage home. The king, with his wife, his son, and a number of his chiefs, prepared products of the country and followed the fleet to China, where they went to court and presented tribute."

About a hundred years later than the preceding article, another account of Malacca was written in the

HAI-YÜ (1537).

"Malacca† is situated in the south; originally it was a dependency of Siam, but afterwards the chief, who was in charge of the country revolted against his master and made himself independent; at what time this happened cannot be ascertained.

* It is evident that the nipa-palm is meant here.

† 滿剌加.

"Going to sea from Ting-mên in the district Tung-kwan* (near Canton), one has to steer the same course as for Siam as far as Pulu Condore, from here the course is due south, until one gets to the strait of Lingga, and then, in two days more, one may arrive there. It is a place where all the barbarians come together, and it may be called a centre in those parts.

"The king lives in a house of which the fore part is covered with tiles, which have been left here by the eunuch Chêng Ho in the time of Yung-lo (1403—1424); the other buildings all arrogate the form of imperial halls and are adorned with tinfoil.

"When foreign envoys arrive there during the time the trade between the different countries is going on, the king makes a great display of soldiers as a matter of precaution.

"The people live in houses of mud; the highest functionaries are called ku-lang ka-ya,† and wealthy men are called *nachoda.*‡ The people are numerous and thriving. A nachoda has many thousand measures of pepper, and the ivory, rhinoceros-horns, western calico, pearls, shells, and different kinds of incense, which are stored up in their houses, cannot be counted.

"It is not their custom to worship spirits, but the men get up when the cock crows, and turning their face towards heaven, they mutter the name Allah,§ which is the general denomination of the father and the mother of the universe.

"They write with Indian letters, and in trading they use tin as their currency; three caties of this metal are about equal to one mace of silver.|| When brokers¶ make any transactions, they take hold of each other's fingers in order to state numbers; though they make bargains for thousands, they make no written contract, but they bind themselves by pointing towards heaven, and this engagement they dare not break.

"The country produces no rice, which they buy therefore from Siam, K'u-lung, and P'o-ti-li.**

* 東莞.

† 姑郎伽邪, the first character must be wrong, as the author certainly means *orang kaya*, a common title among the Malays.

‡ 南和達 *a.* master of a vessel, *b.* a trader who travels about with his own ship.

§ 哈剌.

|| About 0.16 Mexican dollars.

¶ 牙儈, gê-kuei, seems to be a foreign word, but we do not know from what language it is borrowed. In Amoy the word gê-lang, 牙人, is still used to denote a broker.

** 暹羅, 崛龍, 陂隄里, we are unable to identify the two latter names.

"According to their customs it is forbidden to eat pork; when the Chinese who live here eat it, the others are indignant and say it is filthy. They have much milk, which the rich people eat together with their rice.

"For their fowls, dogs, geese, and ducks they also depend on other countries, therefore the prices of these are five times dearer than in China.

"The temper of the people is fierce, but they are true to their word. They are never without a dagger;* as soon as a boy is two years old, they give him a small sword and allow him to carry it. When a word is used which does not please them, they at once take to their sword, and, if a man is killed in this way, the murderer runs away to the mountains and hides himself there for some time; when he comes back again, the relatives of the deceased do not try to seek revenge, and the *orang kaya* does not look into the matter any more.

"When people meet each other, they put their hands on each other's heart as a sign of politeness, but if, by mistake, the hand is put on the other's head, he becomes very angry.

"The poorer people often make themselves guilty of robbery; when they meet a single stranger, they kill him and rob his effects.

"The merchants of the ships live in a hotel, the chief of which always gives female slaves to serve them, and sends them food and drink morning and evening; but if one uses too freely of this, he may be sure that all his money will pass into the hands of the other.

"In contracting a marriage they attach much importance to the marriage presents. The bridegroom has to provide a certain amount, but in his turn expects that the dowry of the bride will be many times as much, and moreover the bride brings five or six slaves with her.

"When people quarrel in the market and abuse each other, they may revile each other personally ever so strongly, without much notice being taken of it; but if in abusing a man one reviles his father or grandfather, or in abusing a slave one reviles his master, they at once begin a deadly fight; therefore they say that it is better to have slaves than to have land, because slaves are a protection to their masters.

"Women hold a market at night, but must finish at the second drum; when they stay over this term and are caught by the patrolling *orang kaya*, they are killed, and the king does not look further into the affair.

"For slight offences they use whipping. Their capital punishment is as follows: they take a piece of wood like a post, of

* 鈀鑞頭, pa-lah-thou. Vide p. 172.

which one end is sharpened and the other planted in the ground about two feet deep; the sharp point is introduced into the anus of the criminal, who cries out for a moment, but immediately afterwards the point penetrates into his body and kills him.

"The poorer people put the body of their dead on a pile of wood and burn it; the richer fill the coffin with camphor and burn it likewise; the next morning all the bones are reduced to dust.

"In this country there are many high mountains and deep valleys. One can go to Siam overland.

"They have much intercourse with Java, but the Javanese are known to be very fierce, and if they take them into their service, eight or nine out of ten kill or wound their masters. These Javanese are very skilled in the use of the blow-pipe with poisoned arrows; if a man is wounded by these he dies instantly.

"In the period Chêng-tê (1506—1522) a ship of the Franks (Portuguese) came to trade here; a quarrel arose about money matters, on which the king put the captain into prison. The Franks went away and made a report to their lord, who determined to rescue him. For this reason he equipped eight large ships, with a number of picked troops, who appeared at once before the place. At that time a year had passed away already, and the people of Malacca were not at all prepared; a great slaughter was therefore made amongst them, and the chief of the Franks took possession of the palace. The king fled to P'o-ti-li, and large numbers of the people dispersed also.

"The Franks wanted to sell the country to Siam, but their offer was refused. They therefore collected their troops, filled their ships and went away, on which the king came back to his old place."

History of the Ming Dynasty (1368—1643). Book 325.

"Malacca* is situated at the south of Champa; with a fair wind one may arrive in eight days at the strait of Lingga, and then it is two days more to the west. It is supposed to be the old country Tun-sun, and the Kora Fu-sa (see above) of the T'ang dynasty.

"In the 10th month of the year 1403, the emperor sent the eunuch Yin Ch'ing† as envoy to this country, to bring presents of silk woven with golden flowers, curtains adorned with gold, and other things. There was no king in the country, and it was not called a kingdom, but it belonged to Siam, to which it paid an annual tribute of forty taels of gold. When Yin Ch'ing arrived there, he spoke of the power and rank of China, and of his

* 滿剌加. † 尹慶.

intention to take the chief with him. The chief, called Pai-li-su-ra,* was very glad and sent envoys to go to the court along with the imperial envoy, and presented as tribute products of the country.

"In the 9th month of the year 1405 these envoys arrived at the capital; the emperor spoke in laudatory terms of their master, appointed him king of the country of Malacca, and gave him a commission, a seal, a suit of silk clothes, and a yellow umbrella, whilst Yin Ch'ing was ordered to go there again and bring all these presents. The envoys said that their king was aware of his duty and wished his country to be a district of the empire, bringing tribute every year, and that he had therefore requested that his mountains might be made guardians of the country. The emperor gave his assent; he prepared an inscription with a piece of verse at the end, and ordered a tablet to be erected on those mountains.

"When Yin Ch'ing arrived to carry out all these orders, the king was still more pleased, and treated him with even more honours than before. In the 9th month of the year 1407 he sent envoys to bring tribute, and in the next year, when Chêng Ho came to his country, he again sent envoys with tribute to go with him to China.

"In 1411 the king came with his wife, his son, and his ministers, altogether five hundred and forty persons; when he had arrived at the suburbs of the capital, the emperor ordered two officers to go and receive him; he was lodged in the building of the Board of Rites, and received in audience by the emperor, who entertained him in person, whilst his wife and the others were entertained in another place. Every day, bullocks, goats, and wine were sent to him from the imperial buttery. The emperor gave the king two suits of clothes embroidered with golden dragons, and one suit with *kilins*; further golden and silver articles, curtains, coverlets, mattresses, etc., everything complete, whilst his wife and the rest also got presents.

"When they were going away, the king was presented with a girdle adorned with precious stones, insignia of his dignity, horses and saddles, and his wife got a cap and dresses.

"On the moment of starting he was entertained by the emperor, and got again a girdle with precious stones, horses with saddles, a hundred ounces of gold, five hundred ounces of silver, four hundred thousand *kwan*† of paper money, and 2600 strings of copper cash; further 300 pieces of silk gauze, a thousand pieces of plain silk,

* 拜里迷刺.

† 貫. A *kwan* of paper-money was equal to a string of a thousand cash. From the liberal amount of paper-money given, we would think that it was at a considerable discount.

and two pieces of silk with golden flowers. His wife, his son, his nephew, and his suite were entertained separately, and got presents according to their rank. Afterwards the officers of the Board of Rites entertained them twice at two different post-stations on their road.

"In the year 1412 his nephew came to present thanks; when he went away the emperor sent an eunuch with him, who came back with new tribute-bearers.

"In the year 1414 the king's son, called Mu-kan-sa-u-ti-r-sha,* came to court and said that his father had died; he was appointed to succeed him, and presented with gold and silks. After this time they brought tribute every year or every two years.

"In the year 1419 the king came to court with his wife, his son, and his ministers, in order to present thanks for the imperial favours; on going away he stated that Siam seemed inclined to attack his country, and the emperor accordingly sent an order to Siam, which that country obeyed.

"In 1424 Sri Ma-ha-la† succeeded after the death of his father, and came to court with his wife, his son, and his ministers.

"In the year 1431 three envoys arrived, who said that Siam was planning an attack on their country, that the king wanted to come himself, but was afraid of being detained by them; that he wished to send a report, but had nobody who could write it; and that he had ordered them therefore to avail themselves of a tribute-vessel from Sumatra, to go and bring this communication. The emperor sent them back to their country in the ships of Chêng Ho, to whom a decree was given for the king of Siam, ordering him to live in good harmony with his neighbours, and not to act against the orders of the court. When these three envoys arrived they brought nothing as tribute, and the officers of the Board of Rites submitted that, according to the rule, they should not get any presents; but the emperor replied: 'These men have come many thousands of miles to complain of an injustice; it would not do to give them nothing.' Accordingly dresses and silks were given to them, just as to other tribute-bearers.

"In the year 1433 the king came to court with his wife, his son, and his ministers. When he arrived at Nanking, the weather was already cold; the emperor ordered him to wait till spring before coming up to the capital, and moreover sent a letter in praise of the king and his wife. When they came to the capital, the emperor entertained them, and gave them presents as customary, and when they returned an officer was charged to provide a vessel for them.

Afterwards the king again sent his younger brother to bring as

* 毋幹撒于的兒沙. † 西里麻哈剌.

tribute camels, horses, and products of the country; at that time the emperor Ying-tsung had already ascended the throne (1435), and as the king was still in Canton, he sent him a laudatory letter and ordered the Governor to let him go back to his country. As this officer was just sending back the envoys of Champa, Kalikut, and nine other countries, the king returned along with these.

"In the year 1445 envoys arrived, who asked that the king Sri Pa-mi-si-wa-r-tiu-pa-sha* might obtain a commission for ruling the country, a dress embroidered with snakes, and an umbrella, in order that he might govern the people of his land. They also said that the king intended to come himself, but that his suite was very numerous, and therefore he asked for a large vessel, in order to be able to make the sea-voyage. The emperor granted all their requests.

"In the year 1456 Sulthan Wu-ta-fu-na-sha† sent as tribute, horses, and products of his country, and asked to be invested as king. The emperor issued a decree by which an officer was sent there for the purpose, but some time afterwards the same king sent tribute again, and reported that the cap and the girdle, which had been bestowed upon him, were burned; the emperor then ordered that a cap of leather, a dress, a daily dress of red silk gauze, a girdle adorned with rhinoceros-horn, and a cap of gauze should be given to him.

"In the year 1459 this king's son, Su-tan Wang-su-sha,‡ sent envoys to bring tribute, on which the emperor ordered some officers to go and invest him as king. After two years the officers of the Board of Rites reported that these imperial envoys, on the second day of their voyage, had met with a storm which disabled the ship; they had been tossed about for six days, and were then rescued by people of the coastguard. The imperial letter was saved, but the goods had all been damaged by water, for which reason they requested that new ones should be given. The emperor granted what was asked, and ordered the envoys to go again.

"In the year 1474 the censor Ch'ên Chün went to Champa with an imperial commission to invest the king there, but on his arrival, he found the country occupied by Annamese soldiers, so that he could not enter it; he then went to Malacca, with the goods he had brought, and ordered its king to send tribute; when, subsequently, his envoys arrived at the capital, the emperor was much pleased, and issued a decree in which they were praised.

"In the 9th month of the year 1481 envoys arrived with the

* 息力八密息瓦兒丟八沙.

† 速魯檀無答佛哪沙.

‡ 蘇丹芒速沙.

report that the envoys of their country, who had returned from China in 1469, had been driven by a storm on the coast of Annam, where many of their people were killed; the rest had been made slaves, and the younger ones had further undergone castration. They also told that the Annamese now occupied Champa, and that they wanted to conquer their country too, but that Malacca, remembering that they all were subjects of the emperor, hitherto had abstained from reciprocating these hostilities.

"At the same time the envoys with the tribute of Annam arrived also, and the envoys of Malacca requested permission to argue the question with them before the court, but the Board of War submitted that the affair was already old, and that it was of no use to investigate it any more. When therefore the envoys of Annam returned, the emperor gave them a letter in which their king was reproved, and Malacca received instructions to raise soldiers and resist by force, whenever it was attacked by Annam.

"Some time afterwards the emperor sent two officers with a commission to invest the son of the late king, Ma-ha-mu-sa,* as king of the country. These two officers were lost at sea, on which the emperor appointed officers to sacrifice to them, and took care of their families; for their suite sacrifices were performed by the officials on the sea-coast, and their families were also provided for. Two other envoys were then sent in their place, of whom one again died at Canton, on which the emperor ordered the governor of Canton to select one of his officers to succeed the deceased, in order to finish this investiture.

"In the year 1508 an envoy, called Tuan Haji,† came to present tribute. His interpreter was a Chinese from the province of Kiang-si, who had run away from China in order to escape punishment for a crime, and fled to their country. This man, along with other Chinese, made a plan to kill and rob the envoy, and then to run away to the west coast of Borneo in order to seek for treasures; accordingly he made a quarrel with his people, when they had returned to Canton, and with the assistance of his fellow-conspirators he killed all of them, taking away everything they had. When this event became known, the guilty parties were soon arrested and brought to the capital, where the interpreter was cut to pieces, others were decapitated, one fined three hundred picols of rice, and the rest banished, whilst the officials of the Board of Rites, who had allowed themselves to be bribed, were all punished. The prime ministers at that time, considering that this crime had been committed by a man from Kiang-si, diminished the annual number of graduates for this province with fifty, and no man from this province got an appointment in the capital.

"Afterwards the Franks (Portuguese) came with soldiers and

* 馬哈木沙.

† 端亞智.

conquered the country; the king, Sultan Mamat,* ran away, and sent envoys to inform the imperial government of this disaster. At that time the emperor Shih-tsung sat on the throne; he issued a decree upbraiding the Franks, told them to go back to their own country, and ordered the kings of Siam and other countries to assist their neighbour in his need; none of these obeyed, however, and so the kingdom of Malacca was destroyed.

"Shortly afterwards the Franks also sent envoys to the court in order to bring tribute and ask for investiture. When they arrived at Canton the governor imprisoned the envoys, as their country had not been reckoned before among the tributary kingdoms, and asked orders from the government. The emperor ordered to give them the price of the goods they had brought, and to send them away.†

"Among the goods which Malacca was accustomed to bring as tribute, the following were the principal articles: agate, pearls, tortoise-shell, coral-trees, crane-crests, quilts made of feathers,‡ white pi-cloth,§ western-cloth, sa-ha-la,‖ rhinoceros-horns, ivory, black bears, black monkeys, babirusahs, cassowaries, parrots, camphor-baros, rose-oil, fragrant balm, chitseh flowers,¶ terra japonica, lignum-aloes, benzoïn, assa-fœtida, and such more.

"There is a mountain from which a brook runs down; the natives wash its sand in order to obtain tin, which is melted by them and cast into little blocks; a workman may collect one of these blocks in one day.

"The soil is poor, and rice is not abundant; the people chiefly occupy themselves with washing tin and fishing. The weather is warm during daytime and cool at night.

"Men and women wear their hair in a knot; their body is very dark, but some are of a lighter colour, being descendants of Chinese.

"Their customs are good and their way of trading is pretty fair, but since the Franks have taken the country, things have become worse, and merchant-vessels seldom go there any more, mostly

* 蘇端馬末.

† We have here a striking example of the way in which Chinese ascendency in these parts was destroyed by the arrival of the Europeans, and of the reasons which caused the latter to be received with bad grace by the Chinese, from the first time they made their appearance.

‡ 瑣服.

§ 白苾布? [See above, p. 68, and M. d'Hervey de Saint-Denys, l. l., p. 539.]

‖ 措哈剌? [This is the Malay سخلت, also written سقلت.]

¶ 梔子花, according to Williams, "Syllabic Dictionary," p. 55, the Gardenia floribunda, used to dye yellow.

proceeding direct to Sumatra; when, however, ships have to go near this country, they are generally plundered, so that the passage there is nearly closed.

"Those of the Franks who come themselves to China for trading purposes, go directly to Macao, in the district Hsiang-shan, province of Canton, where some of them are always found."

JOHORE.*

HISTORY OF THE MING DYNASTY (1368—1643). Book 325.

"Johore is situated near Pahang, and is also called U-tang-ta-lim.† In the beginning of the 15th century, when Chêng Ho visited the different countries of the west, the name Johore did not exist, but it is said that he passed the island Tong-si-tiok,‡ and as this island is situated exactly where Johore is, it may be supposed to be the same country.

"Between the years 1573 and 1619 their chief was very warlike, and his neighbours Indragiri and Pahang had much to suffer from him.

"Chinese who trade to foreign countries often visit this place, and are even invited to do so.

"In this country they cover their houses with grass, and make fortifications of palissades, which they surround with a ditch; in times of peace the people go trading to other countries, but when there is war all are called to be soldiers, and their country is considered to be very strong.

"The land produces no rice, which they always buy from other countries.

"The men shave their heads, go barefooted, and have a sword at their side; the women wear their hair in a knot. Their chief carries two swords.

"They write on kajang-leaves, tracing the letters with a knife. When they marry they always take a wife of their own rank.

"The king uses golden and silver eating utensils, and the other people use earthenware; they have no spoons or chopsticks. They are much given to fasting, and on those occasions they do not eat before they see the stars. The fourth month is the beginning of their year.

"When they are in mourning the women cut their hair, and the men shave their heads repeatedly; the dead are all burned.

"Products of this country are rhinoceros-horns, ivory, tortoise-shell, camphor-baros, myrrh, dragonsblood, tin, wax, fine mats, cotton, areca-nuts, agar-agar, birds'-nests, sago, mangostines, etc.

* 柔佛, Jiu-hut, according to Amoy pronunciation.

† 烏丁樵林.

‡ 東西竺山.

"Formerly a man called Ki-ling-jin* was treasurer in this country, and faithfully served the king, who showed great confidence in him; as the king's younger brother saw himself kept at a distance, he became jealous and secretly killed him; some time afterwards he went out on horseback and was thrown so that he died; his attendants saw the spirit of the treasurer on the spot, and since this time every house has sacrificed to him."

Tung Hsi Yang K'au (1616). Book 4.

"Johore does not produce any rice, and the inhabitants are accustomed to go in small ships to other countries, exchanging the products of their own for rice. When they meet merchant-vessels bound for other places, they invite them to come to their country also. When our ships go there, they have to pay fixed duties; the trade is done on board the ships, and they have no shops on shore."

PAHANG.†

Hsing-ch'a Shêng-lan (1436).

"This country is situated at the west of Siam;‡ it is surrounded by rocky ridges of mountains, which, seen from a distance, have the appearance of a table-land. The ground is fertile, and they have abundance of rice. The weather is often very warm.

"Their customs cannot be much praised; they make human images of fragrant wood, and kill people in order to make a sacrifice of the blood, when they pray for luck or try to ward off evil.§

"Men and women have their hair in a knot, and are clad with a single piece of cloth. Girls of rich families wear four or five

* 吉寧仁.

† 彭坑; these two characters are properly pronounced *p'ang-k'ang*, but the first, which has the sound $p'e^{n}$ or $p'a^{n}$ in Fukien, is often used for rendering the sound *pa* or *p'a*, whilst the second character is taken for *hang* on account of its primitive, which often has this sound in other combinations.

‡ This is of course erroneous, but we must remember that everything west of Borneo was called the Western ocean, 西洋, and people who went there were said to go to the west, even if this was not really the direction in which they travelled.

§ The author of this account visited this place in 1412, as one of the followers of the celebrated envoy Chêng Ho. We must therefore believe what he says, and it would seem then that the worship of Çiva or Kâlî, in its worst form, still existed there at the time. Altogether we have reason to think that Mohammedanism was not completely prevalent yet in those parts at the beginning of the 15th century, for of Malacca and Johore, too, we read that they still burned their dead, though they were called Mohammedans, and it is probable that only the superior classes were converted to the Islam as yet.

golden circles on their foreheads, and the daughters of the common people use strings of coloured glass beads instead.

"They boil salt out of seawater, and make wine by fermenting rice-gruel.

"Products of the country are lignum-aloes, camphor, tin, and a kind of wood used in dyeing. Articles of import are gold, silver, coloured silks, Java-cloth, copper and ironware, gongs, boards, etc."

HISTORY OF THE MING DYNASTY (1368—1643). Book 325.

"Pahang* is situated at the west of Siam. In the year 1378 the king, Maharaja Tajau,† sent envoys with a letter, written on a golden leaf, and bringing as tribute six foreign slaves, and products of the country. They were received according to the established rules.

"In the year 1411 the king, Pa-la-mi-so-la-ta-lo-si-ni‡ sent envoys carrying tribute. In 1412 Chêng Ho went as an envoy to their country, and in the year 1414 they sent tribute again.

"In the year 1416 they sent tribute together with Kalikut and Java, and Chêng Ho was again ordered to go there.

"The soil of this country is fertile; the climate is always warm, and rice is abundant there; they make salt by boiling seawater, and wine by fermenting the sap of the cocoanut-tree.

"The higher and lower classes are on a very intimate footing, and there are no thieves; they are very superstitious regarding demons and spirits, making their images of fragrant wood, and sacrificing men to them, in order to avert calamities or to pray for happiness.

"Amongst the articles which they brought as tribute were elephant-teeth, camphor-baros, olibanum, lignum aloes, sandal-wood, pepper, sapan-wood, and such more.

"In the period Wan-li (1573—1619) the son of the viceroy§ of Johore was to marry the daughter of the king of Pahang. When the marriage was about to take place, the viceroy brought his son to Pahang, and the king of this country gave a feast, where all his relatives were present. The son of the king of Polo (Bruni) was the son-in-law of the king of Pahang; he offered a cup of wine to the viceroy, who then saw that he had on his finger a large pearl of great beauty, and wanting to have it, he offered a very high price. The prince would not part with it, on which the viceroy became angry, went home, and came back with soldiers to attack the country. The people of Pahang were taken unprepared; they dispersed without fighting, and the king fled to the gold-

* 彭亨. † 麻合刺惹答饒.

‡ 巴刺密瑣刺達羅息泥. § 副王.

mountains, along with the prince of Bruni. The king of Pu-ni (western coast of Borneo) was the elder brother of the king's wife; when he heard of all this, he came with his people to assist those of Pahang, and then the viceroy of Johore was compelled to retire, after having burnt and plundered very much.

"At that time the spirits in the country wailed for three days, and half of the people had been killed; the king of Puni took his sister home with him, and the king of Pahang followed him also, ordering his eldest son to govern the country.

"Some time afterwards the king resumed the government, but his second son, who was of a bad disposition, poisoned his father, killed his brother, and ascended the throne himself."

The Tung Hsi Yang K'au (1618) gives about the same account, with the following addition:

"This king, who killed his father and his brother, is reigning still. He is in the habit of buying from the Mau-su * pirates the men they have caught, and all the countries thereabout suffer severely from this. These Mau-su pirates are natives belonging to Bruni (Polo); they roam over the sea for the purpose of stealing men, whom they bring to Pahang and sell as slaves† there. When one of them does not obey his master, he is killed and used for the sacrifices. The price of a slave is about three pieces of gold.

"When a ship arrives there, it has to send fixed presents to the king. The latter has erected a number of shops, and the merchants can occupy in these as much as they want, paying accordingly. The people of the country come there to trade with them and the merchants live there also. These shops are not far from the ships; when the watchmen on board cry out at night, it can be heard by those who sleep on shore."

KELANTAN.‡

HISTORY OF THE MING DYNASTY (1368—1643). Book 326.

"In the year 1411 the king Maharaja K'u-ma-r § sent envoys to bring tribute, and in 1412 Chêng Ho received orders to bring him an imperial letter praising his conduct, and to present him with different kinds of silk."

The Tung Hsi Yang K'au gives an account of Kelantan and of

* 毛思賊, comp. p. 224.

† The name used for slaves here is 崑崙奴 or slaves of K'un-lun, the latter being, amongst others, the Chinese name for Pulu Condore. We do not know how to explain this name, which is here, as in many other places, used for slaves in general, without any reference to the land they come from. Compare p. 188, note *, and Bretschneider's "Arabs," p. 14.

‡ 急蘭丹. § 麻哈剌査苦馬兒.

the neighbouring Patani, but makes the unfortunate mistake of confounding the latter, which is called Ta-ni* by the Chinese, with Pu-ni† or the west coast of Borneo. In consequence of this mistake, it has mixed up these three countries in a hopeless mass, from which we do not venture to make any extract.

Our sources give no further information about the Malay peninsula, but we find that the often quoted travellers of the first decades of the 15th century, visited some of the smaller islands on its coast, and give the following account of two of them:

PULU SEMBILAN OR THE NINE ISLANDS.‡

Hsing-ch'a Shêng-lan (1436).

"These islands are situated near Malacca. They chiefly produce lignum aloes in its different qualities, and are covered with a luxuriant vegetation.

"In the year 1409 Chêng Ho and his party sent soldiers into the forest to collect this incense, and they got six pieces 8 or 9 feet in diameter, and 60 to 70 feet long; the smell of it was very strong, and it had fine black marks.

"The people were much astonished, and said that the imperial soldiers were imposing and strong as the gods."

The author says these islands are near Malacca, probably because he did not know any other place on the coast; they lie, however, at a certain distance, being situated before the river of Perak.

TONG-SI-TIOK.§

Hsing-ch'a Shêng-lan (1436).

"This island is situated in the sea opposite to the Strait of Lingga; high mountains face each other from both sides.

"The ground is barren and not fit for agriculture; they always get their rice from the coast of Sumatra and other countries. The climate is variable.

"They boil salt out of seawater, and make wine from the cocoanut-palm.

"Men and women cut their hair and wear a striped sarong.

"The country produces areca-nuts, cotton-cloth, and mats of plantain-fibres.

"Articles of import are tin, pepper, ironware, etc."

We are not able to identify this island with absolute security,

* 大泥. Comp. p. 236. † 浡泥.
‡ 九州. § 東西竺.

but from the indications given above, combined with those in the Tung Hsi Yang K'au, which says that it was quite near or identical with Johore, we have no hesitation in taking it as the present island of Singapore.

The peculiar name given to it, must remain unexplained. We must only draw the attention to the two first syllables, *tong-si*, which we have taken as the transcription of the native sound, but which may also mean east and west.

Chinese geographers speak of two other countries on the Malay peninsula, called P'an-p'an and Tan-tan;* the former probably is P'un-p'in on the east-coast, as we observed already on p. 241, and the latter we have not been able to identify. From what is told about them, it appears that they rather belong to southern Siam and should find their place there.

[*Additional Note* to p. 191, l. 13: According to Ma-tuan-lin, as translated by M. d'Hervey de St.-Denys, l. l. p. 580, *sa-tien* was a ceremony of respect which consisted in the placing of pearls and camphor, in a silver dish, on the steps leading to the Emperor's throne. See also p. 565, Note 21.]

APPENDIX.

In the preceding pages different products of foreign countries have been mentioned without further comment, though the Chinese terms by which they are designated in the original text have been, and some of them still remain, subject to much uncertainty. It may therefore not be superfluous to give the grounds on which our translations of these names have been based.

Cotton. Before this plant was introduced into China, it was called 吉貝 *Ke-pa* or 古貝 *Ku-pa*, a native name which we find back in the Malay *kapas* or *kapeh*. In the "History of the Liang dynasty," Book 54, p. 1, we find the following notice: "*Ku-pa* is the name of a tree, of which the flowers, when ripe, are like goose-down; the natives take out the fibres and spin them, after which they use them for weaving a kind of cloth as white as linen. They also dye the thread in different colours and weave cloth with patterns."

* 盤盤 and 丹丹.

SARONGS, the native name of a piece of cotton or silk, which is fastened round the middle and hangs down to the feet. The "History of the Liang dynasty," Book 54, p. 3, says: "Men and women (in Siam) all use a broad and long piece of cotton, which they wrap round their body below the loins and call *kan-man* 干縵 or *tu-man* 都漫." We are unable to say from what language these names have been taken.

BROADCLOTH, now called *to-lo-ni* and written 哆羅呢 or 哆羅嗹, was formerly rendered by the characters 兜羅綿. Vide "Tung Hsi Yang K'au," Book 4, p. 10, r.

SO-FU 瑣服, also written 梭服, seems to have been a kind of dress or quilt made of feathers. Vide "Tung Hsi Yang K'au," Book 4, p. 10, r.

LIGNUM-ALOES is the wood of the Aquilaria agallocha, and is chiefly known to the Chinese as 沉香, sinking incense. The Pên-ts'au Kang-mu describes it as follows: "沈香 *sinking incense,* 沉水香 *id.,* also called 蜜香 *honey incense.* It comes from the heart and the knots of a tree and sinks in water, from which peculiarity the name *sinking incense* is derived. That which half sinks and half floats is called 棧香, and that which does not sink is 黃熟香. In the Description of Annam we find it called 蜜香 *honey-incense,* because it smells like honey." The same work, as well as the Nan-fang Ts'au-mu Chuang, further inform us, that this incense was obtained in all countries south of China by felling the old trees and leaving them to decay, when after some time only the heart, the knots, and some other hard parts remained. The product was known under different names, according to its quality or shape, and in addition to the names given above, we find 鷄骨香 *fowl-bones,* 馬蹄香 *horse-hoofs* and 青桂 *green cinnamon;* these latter names, however, are seldom used. 棧香 is also written 暫香, and 黃熟香 is interchanged with 黃速香 or even 速香. The Ta Ming Yi-t'ung Chi says that this incense, when taken from a living tree, is called 生速香, whilst it becomes 熟香 when the tree is decayed and only the fragrant parts remain.

CAMPHOR-BAROS. This substance is generally called 龍腦香 *dragon's-brain-perfume,* or 氷片 *icicles.* The former name has probably been invented by the first dealers in the article, who wanted to impress their country-men with a great idea of its value and rarity.

In the trade three different qualities are distinguished: the first is called 梅花腦 or 梅腦 *prune-blossoms,* being

the larger pieces; the second is 米腦 or 米龍腦, *rice-camphor*, so called because the particles are not larger than a rice-kernel, and the last quality is 金脚腦, *golden dregs*, in the shape of powder. These names are still used by the Chinese traders on the west-coast of Sumatra.

The Pên-ts'au Kang-mu further informs us that the Camphor-Baros is found in the trunk of a tree in a solid shape, whilst from the roots an oil is obtained called 婆律香 *Po-lut* (Pa-lut) *incense*, or 婆律膏 *Polut balm*. The name of Polut is said to be derived from the country where it is found (Baros). We have translated it by camphor-oil.

ATTAR OF ROSES, 薔薇水 *rose-water*, or 薔薇露 *rose-dew*. The Ta Ming Yi-t'ung Chi has the following notice: "This is the dew found on roses, which flowers, however, are different from those of the same name in China. The natives often take these flowers and soak them in water, in order to imitate this dew, for which reason the article is frequently spurious; it may be tried by shaking it in a glass bottle: when the froth is equally divided through the whole bottle, it is genuine."

STORAX LIQUIDA. According to Dr. Bretschneider (Arabs, p. 20) this is probably the correct translation of the Chinese 蘇合油. The Chinese descriptions of it are very obscure and conflicting; many authors, however, agree in saying that it is not an original product, but a balm composed of different other essences.

MYRRH is generally called 沒藥, and sometimes 末藥.

OLIBANUM. According to the Pên-ts'au Kang-mu, 乳香 and 熏陸香 are the same substance, but its description does not enable us to identify it. Dr. Bretschneider (Arabs, p. 19) says he analyzed a specimen passing under this name, which proved to be olibanum, mixed with other substances.

HSIANG-CHÊN HSIANG, 降眞香, is the name of a fragrant wood, much used as incense, but which we have not been able to determine. Dr. Williams says it comes from Sumatra, where it is called laka-wood, and is the product of a tree to which the name of Tanarius major is given by him. For different reasons we think this identification subject to doubt.

BENZOIN, 金銀香 *gold and silver incense*. It is described, as follows, in the "Tung Hsi Yang K'au," Book 3, p. 23, r: "Inside this incense are white spots as clods of white wax; the best sort has much of this white, and the

inferior sorts but little. When burnt it is very fragrant." We think this description cannot but apply to the gum benzoin.

DRAGON'S-BLOOD, ordinarily called 血竭 *dried blood,* is sometimes written 麒麟血 *the blood of the kilin,* a fabulous animal in Chinese mythology.

AMBERGRIS, 龍涎香 *dragon-spittle perfume.* From the description on page 100, there is not the slightest doubt that this translation must be correct.

CLOVES, 丁香 *nail-incense,* are sometimes called 鷄舌香 *fowl-tongue incense,* not to be confounded with 鷄骨香 *fowl-bone incense,* a kind of lignum aloes, q. v.

COWRIES are mostly designated by 貝, sometimes also by 紫貝 or 貝齒.

SANDALWOOD. The full name is 檀旃, a transcription of the native sound, but this is generally abbreviated into 檀香.

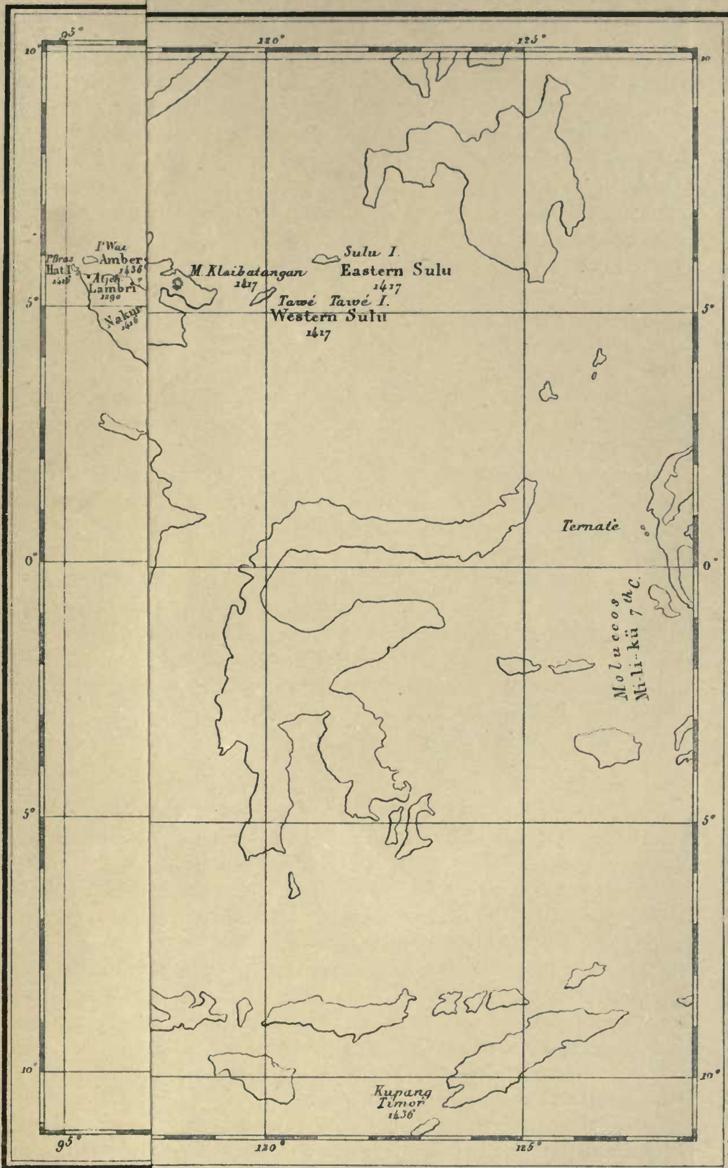
CASSOWARY, 火鷄 *the fire-fowl.* The "Tung Hsi Yang K'au" describes it as follows: "This bird is found in Sumatra; its body is round and of the size of a goose; it has a long neck with two excrescences, soft and red, which form a kind of cap. Its bill is pointed, and its feathers like goat's-hair; it has long legs with sharp claws, and it likes to eat burning coals, from which it has got its name."

The other articles, animals, etc., mentioned in the course of these pages, are sufficiently known to be identified without any further explanation.

A small map has been added to these notes, giving a sketch of the Archipelago, and containing the principal names mentioned in the preceding pages. The modern names are in running hand, the old names in printing letters, whilst the numbers added to these names, refer to the time when they are first spoken of in history.

In this map it was necessary to fix doubtful localities with more precision than has been done in the text; we beg our readers to remember this when looking at it, as in such cases the uncertainty fully remains, and as the map is not intended to give more than a general indication of the probable or possible situation.

Pu-ni, on the western-coast of Borneo, has been placed near Sambas, as the latter town formerly was the principal Malay settlement on or near the sea-coast.


95°
120°
125°
10°
5°
0°
5°
10°
Amber
1436
Atjeh
Lambri
1290
Nakur
M. Klaibatangan
1417
Sulu I.
Eastern Sulu
1417
Tawé Tawé I.
Western Sulu
1417
Ternate
Moluccos
Mi-li-kü 7th C.
Kupang
Timor
1436
95°
120°
125°

VI.

OUTLINES OF A GRAMMAR OF THE MALAGASY LANGUAGE.

By H. N. VAN DER TUUK.

["Journal of the Royal Asiatic Society," N.S., vol. i. (1865), pp. 419–46.]

INTRODUCTION.

I. The Malagasy belongs unquestionably to the stock of languages which have been denominated *Malayo-Polynesian*, and more particularly to the great Western Branch, which comprehends the languages of the lank-haired races of the Indian Archipelago and the Philippines, and which we shall call *Malayan* (from the most predominating language in that part of the globe), to distinguish it from the Eastern Branch, which may be called *Maorian* (from the Maori of New Zealand), the geographical term *Polynesian* having the disadvantage of not excluding the languages of the crisp-haired races. The Malagasy bears the greatest analogy to the Toba dialect of the Batak in pronunciation (III.), and many salient points * in its grammatical structure may be pointed out (IV.) to prove its affinity to Javanese, Batak, Malay, Dayak,† and other Malayan tongues. The words, common to many of these, have not been derived from the languages of the two most civilized and formerly enterprising nations of the Indian Archipelago (the Malays and Javanese), as the following small list of words, not existing either in Javanese or Malay, and taken at random, will suffice to prove: ‡—

1. Bee, *uwáni* (Batak), *báni* (Mangkasar), *awáni* (Bugis), *fáni* (Timor and Rotti), *áni* (Bima).
2. Black, *wúring* (Harafura of Menado), *búring* (Dayak, charcoal).
3. Forest-leech, *limátok* or *limátĕk* (Batak), *limátik* (Tagal).
4. Satiated, *bósur* or *bĕsur* (Batak), *wĕsu* (Menado Harafura and Sangar).
5. Ghost, *nítu* (Batak and Timor), *aníto* (Tagal and Bisaya), *líto* (Favorlang on Formosa), (*si-*)*nítu* (Mantáwey).

* Against Crawfurd's "Dissertation," p. iv.
† Of which only the *Ngaju* is sufficiently known.
‡ Against Crawfurd, l. l. p. vii., below.

6. Bananas, *óntsi** (Malagasy), *únchim* (Batak, wild bananas), *únti* (Mangkasar), *punti* (Sumbawa and Sangar). The *cultivated* banana is called *gáol* in Toba, on account of the vibration of the *l*, properly the same as *galo*, as in the language of Bima, and *gáluh* in the Daíri dialect of the Batak.
7. To steal, *tákko* or *tangko* (Batak), *tákow* (Dayak).
8. Rat, *voalávo* or *valávo* † (Malagasy), *bláwow* (Dayak), *baláwo* (Mangkasar).
9. Salt, *síra* (Malagasy and Batak), *síya* (Sasak, on the island of Lombok, Sangar, and Bima).
10. Mouth, *baba* or *babah* (Batak), *bawa* (Nias), *vava* (Malagasy).
11. Foot, *néhe* (Daíri), *ne* (Sumbawa).
12. Foot, *gáe* (Nias), *káe* (Daíri, thigh), *háe* (Toba, the lower part of a land towards the sea, *háe-háe*, thigh).
13. Nine, *siwah* or *síya* (Batak), *sívy* (Malagasy), *hiwa*, *iwa*, &c. (Maorian).

Observation.—Many words, besides, which might be considered Javanese or Malay, have more complete forms in the other Malayan languages; which puts it beyond all doubt that they have not passed through those channels. A striking example is the word for earthquake, which in Javanese is *líndu* (in the Malay of Batavia *línu*, and in the Balinese *línuh*), whereas Sangar has yet *líndur*, Tagal *líndol*, Bisaya *líndog*, and Daíri *rénur*.‡ Other words have the changed form of another language than Javanese—*e.g.*, *sófiñă* (ear)—*súping* (Batak), *kúping* (Javanese).

II. The words which appear to Crawfurd "most fit to test the unity of languages are those indispensable to their structure; which constitute, as it were, their framework, and without which they cannot be spoken or written; as, for instance, the prepositions representing the cases of more complex languages, and the auxiliaries to express tenses and moods." Not finding similarity in them, he is led to suppose that the Malayan languages are no sister tongues, but distinct languages. Here Crawfurd has overlooked the fact that such words in kindred languages *seem* very often to be different to a person who neglects the grammar, and satisfies himself with looking over vocabularies. Would not a man, not well acquainted with the Teutonic languages, infer from *but*, *maar*, *sondern*, and *to*, *naar*, *zu*, &c., that English, Dutch, and German are no kindred languages? Such words *seem* different, because they are very liable to different applications; thus, for instance, the preposition *ka* in Malay (*to* a place) does not exist as a preposition either in Batak or Malagasy, but only as a prefix; v.g. *ha-darat* (Batak), to step *to the wall* of a bathing place, to go on shore, said of a person bathing,

* *o* as *u* in German and Italian. † *v* as *w* in Dutch.
‡ *nd* often = *n* as medial (compare the last word in III. 1).

ha-trátra (Malagasy), *up to the breast* (*ha* = *ka*, see III. 1). We need not examine all these words to come to the result that they are originally the same, and only differently applied, some of them being still used in the same way; thus, for instance, the preposition *at*, *in*, is in Malay and Batak (Toba and Mandailing) *di*, in Mangkasar and Bugis *ri*, in Daíri Batak *i* (in Javanese closed with a nasal *ing*); *of* is in Tagal, Bisaya, Malagasy, and Batak still *ni; to* is in Toba, Mandailing, and Favorlang *tu* (Dayak *intu*); *si* is in Daíri the relative pronoun, and takes sometimes a closing nasal before the following word (*simpĕra:* what is dry), whereas in Javanese it is *sing; si* is both in Mangkasar and Daíri the particle of unity (*sikarang*, one moment, &c.).

III. Striking peculiarities of the Toba and Malagasy in pronunciation are:—

1. An *h*, as initial or medial, where another Malayan language has *k;* v.g. *hólatră* * (Malagasy) fungus = *kúlat* (Malay); *hála* (Malagasy and Toba) scorpion = *kála* (Malay from the Sanskrit); *házo* (Malagasy) tree, wood = *háyu* (sub-Toba and Mandailing) *háu* (Toba), *káyu* (Malay, Javanese, Daíri, &c.); *táhotră* (Malagasy) dread = *táhut* (Toba *ma-tahut*, to be afraid), *tákut* (Malay); *hávitră* (Malagasy) a pointed iron, a spit = *káwit* (Basaya) a crook, a hook, *káit* (Malay), *káut* (Daíri), *háit* (Toba and Mandailing); *handriñă* † (Malagasy) forehead = *kăning* (Malay, in Menangkabow it means eyebrow).[1]

2. A *k* as medial in Malagasy = *kk* in Toba, where Malay, Javanese, or any other kindred language has *ngk;* v.g. *tóko* (Malagasy) trivet = *túngku* (Menangkabow); *vakóană* (Malagasy) a screw pine, *pandanus* = *bakkuwang* (Toba pronunciation of the Daíri *bĕngkúwang*), *bangkúwang* (Menangkabow), *măngkúwang* (Malay).

3. A final *k* in Malagasy and Toba becomes *h* before the vowel of a suffix; v.g. *ulóhon* (Toba) eaten by the worm, from *úlok* and *on; iráhină* (Malagasy) being sent as a messenger, from *írakă* and *ină*.

4. A final *n* in Malagasy causes an initial *h* to be changed into *k*, and sometimes into *tr;* v.g. *olon-kafa* or *olon-trafa* (stranger), from *ólonă* (man), and *hafa* (strange). In the same way we find in Toba *tíak-kúta* (from the fortified village), from *tían* (from) and

* The vowel of the final syllables *tra*, *na*, and *ka*, is but slightly sounded, and in some dialects of the Malagasy dumb.

† *n* as *ng* in *singer*, *ng* being pronounced as *ng* in *longer* (in Malay, &c., words represented by *ngg*); see also I. Observation.

[1] [Compare also Malay and Toba *hara*, mother-of-pearl, Malay *karah; helatra*, Toba *hilap*, Malay, *kilat*, lightning; *haditra*, Toba *huling*, Malay *kulit*, skin; *hady*, *haly*, ditch, Toba *hati*, Malay *gali*, trenched; *hoho*, nails, Malay *kuku; hamory*, rudder, Toba *hamudi*, Malay *kamudi; vohitra*, hill, Malay *bukit; hadoka*, the nape of the neck, *kodok.*]

huta (the Sanskrit *kuta*, see 1), and *tittíttu* (my ring) from *títtin* (ring), and *hu* (suffix, mine). In the Mandailing an initial *h* is changed always into a *k* by a preceding final consonant; v.g. *tingon kuta* (= *tiak-kúta*) from *tingon* = *tian*, and *huta* (in South Mandailing pronounced *uta*).

5. In Malagasy *ts* is put instead of initial *s* by the influence of a final consonant; v.g. *lálană sárotră* becomes *lalantsárotră*. In Toba we have *tiatsaba* (from the rice field) out of *tían* + *saba* (rice field). In the South Mandailing and Daíri an *s* is pronounced nearly as *ch* in English (child) after a final *n;* v.g. *ránchang* (written *ransang*).

Observation.—Although every Malagasy word terminates with a vowel, a great many words derived by the aid of a suffix, as, for instance, *ină* and *ană* (corresponding respectively with the Toba suffixes *on** and *an*), show an inserted consonant (*v*, *z*, or *s*), which is sometimes only to be explained by comparison with a language wherein words terminating with a consonant are frequent. Thus, for instance, the Malagasy root *nify* (*ma-nify*, thin) is precisely the same word as the Malay *nipis*, as is evident from the derived *hanifísină* (what is made thin). The Malagasy, like the Toba, not having the semi-vowel *y*, represents it very often by *z* (see *hazo* in 1, and § 1 *a*). From this we see words wherein an inserted *z* corresponds with a *y* in Malay; v.g. *salázană* (a gridiron), from *sály* (roasted). Now *saly* in Malay is *sáley* (*mañáley*, to cure or dry by smoke or the heat of fire), and this *sáley*, with the suffix *an*, becomes *saláyan* (which would signify where the curing takes place). Compare the Observation in VI.

IV. The salient points in grammatical structure which the Malagasy has in common with the other Malayan languages, are :—

1. The use of the prefix *mi*, mostly to form intransitive verbs (*mi-ála*, to go out), and occasionally to form transitive verbs (*mi-vidy*, to buy). The same obtains in Batak, with the prefix *mar* (Daíri *mĕr*); v.g. *marhóda* (Daíri *mĕrkúda*) to be on horseback, *margadis* (Toba) to sell = *mĕrdeya* (Daíri). The prefix *mi* (Batak *mar* or *mĕr*) is in Tagal and Bisaya *mag*, in Malay *băr*, in Dayak *bara*, in Iloco *ag*, in Mangkasar *aq*,† (*q* not fully sounded), in Kawi *ma*, and in Javanese *a* (see Note at the end, I. 1).

2. The prefix *ma* closed with a nasal forms mostly transitive verbs, as in Malay, Batak, Kawi, &c. The nasal, in some cases, to be stated below, causes the initial consonant of the root to disappear; v.g. *manóratră* (to write) = *mañurat* (Malay), *manúrat* (Toba), from *sóratră* (Malay and Batak *súrat*).

3. The substantives with an active sense are derived from the verbs by the change of the initial *m* into its sharp mute (*p* in

* Kawi and Javanese *ĕn*, Tagal *in*.

† See "Opmerkingen naar aanleiding van eene taalkundige bijdrage van den Hoogleeraar Roorda," p. 35. [J. L. A. Brandes, l. l. p. 130–4].

Batak, Kawi, &c., and *f* in Malagasy); v.g. *pambuwat* (Batak) 1, the taking of anything in a certain way; 2, taker, who takes something; from *mambúwat* (to take); *fañála* (Malagasy) = *pambuwat*, (1) *mpañala* = *pambúwat*, (2) from *mañala* = *mambuwat*.

4. The passive is made in Malagasy as in the other Malayan languages, by the omission of the nasal; the initial consonant of the root, if lost by its influence (2) reappearing; as, for instance, the passive verbal noun of *manápakă* (to break) is *tapáhină* (III. 3). In the other languages the same takes place; v.g. *timbángon* (passive verbal noun), from *manimbang* (to weigh), from *timbang*.

5. A peculiarity of the Malagasy worth noticing is the use of a preposition before a substantive, not with the sense of an adverb, as might be supposed, and is really also the case (*andañitră*, in heaven), but very often to designate the proper name of a place as a real substantive; as, for instance, we have Ankova (the country of the Hova tribe) although it is composed of *anỳ* (at, in, &c.) and *Hova* (name of a now predominating lank-haired tribe of the island), and should signify in the Hova, or at Hova.[1] The same is to be seen in Javanese, v.g. *ngayódya*, from *ing Ayódya* (lit. at Ayodya), the ancient name of the Indian Oude; the Sanskrit *Langkā* (Ceylon) is mostly in Javanese *ngalĕngká* (instead of *ing-lĕngka* (on Ceylon). In Batak a few remnants of this are to be traced; v.g. *júma* (Daíri, a dry field for cultivation), although it is melted down from *di-úma* (in the field); *haúma* (Toba) means the same, although it is visibly composed of *ha* (see II.), and *uma* (field for cultivation, either dry or watered), and should signify, to the field.*

6. In Malagasy *faha* is a prefix, which also forms ordinals from cardinals; v.g. *fahatelo*, the third. In Toba we find *paha* as a prefix for the names of the Batak months; v.g *si-pahatolu*, the third month (*si* being a prefix for substantives that are used for proper names).

V. The Malagasy has the same idiosyncrasy as its kindred languages:—

1. Tear is expressed by water of the eyes (*ráno-máso*) as in Malay (*áyar máta*), and Sundanese (*chi-máta*), &c.

2. Sun is eye of the day (*máso-ándro*) as in Malay (*mata-hári*) and other languages.

3. To be congealed is expressed by to sleep (*mándry*), as in Batak (*módom*).

4. Prince implies, what is to be waited upon (*andríană*, root *ándry*), just as in Javanese, where *pangéran* (Kawi *pangheran*) is derived from *mangher* (to wait upon).

[1] [Further examples are: *an-kavánana*, to the right; *an-kavía*, to the left; *an-dafy*, beyond (from *lafy*, side), and thus *an-dafi-nd-ranomásina*, beyond the seas—*i.e.*, foreign countries.]

* For other examples see "Tobasche Spraakkunst," p 65*a*.

5. Backbone is tree of the back (*hazondamósina*, i.e., *hazo* + *n* + *lamósină*),* just as in Toba (*háu-tanggurung ; hau*, see III. 1).

6. Vowels are children of writing (*zana-tsóratră*). In Batak the same idea, *anak ni surat* meaning the signs, which are added to the characters, which are mostly consonants, and have the inherent *a* (*ha*, *ga*, *ta*, &c.), to express either other vowels (as *i*, *e*, *o*, &c.), or the sign of a final *ṅ*, *h*, &c. In the same way *reni-landy* (mother of silk) is silkworm, as in Malay *indung sutăra* is cocoon; *reni-tantely* (mother of honey) is bee (in Malay *indung mádu* means a honeycomb). In Malay, when bow is opposed to arrow, it is called *ibu panah* (mother of the bow), arrow being expressed by *anak panah* (child of the bow); the same in Malagasy, *renin-antsaky* (mother of the bow, bow), and *zanak' antsaky* (child of the bow, arrow).

7. Leg is expressed by a composition with *vóa* (fruit), viz., *voa-vítsi*; as in Batak, calf of the leg (*buwah bitis*).

8. Calf of the leg is in Malagasy belly of the leg (*kibon-dránjo*, i.e., *kíbo* belly, *n*, and *ránjo** leg), just as in Malay (*părut kaki*).

9. Ten thousand is expressed by *álină* (night), as in Batak, millions, or any very great number, by *gĕlap* (dark).

10. *Oli-panjéhy*, name of a kind of worm like a caterpillar, the spanning worm (*ólitra* worm, and *fanjéhy*† spanning, from *zéhy*, a span), which is the Batak *jongkal jóngkal*, what looks like a span, from *jóngkal* (Malay *jangkal*), a span, the worm creeping with a bent back and having the appearance of a spanning hand.

VI. To detect similarity of words in kindred languages the phonetic changes are to be fixed by rules, a mere comparison by homophonous words being dangerous, and often leading the scholar astray; as has happened to Mr. Crawfurd, who, just as Mr. T. Roorda, in his edition of Gericke's "Javanese Dictionary," has been deceived by the sound.‡ So, for instance, Mr. Crawfurd compares *volombava* (moustaches) with Malay *buluh bawah*,§ which has to signify, according to him, hair below, but is an unheard-of expression. The Malagasy word, however, is *vólo* (hair) + *n* (instead of *ni*, of) + *vava* ‖ (see I. 10), and is accordingly the Nias *bumbawa* (*bu*, hair + *m*, joint of words + *bawa;* see I. 10). He further compares *sívy* (I. 13) with the Javanese *sáṅga* (nine), which has nothing to do with it. I subjoin here a few rules by which to detect identity of seemingly different words.

1. *Tr* in Malagasy, save in the final syllable (III. 1, in the note), is *d* in Malay and other sister tongues; v.g. *trózonă* (a whale) = *duyung* (*halicore duyung*, a kind of sea cow); *trátra* (breast) = *dáda ; traño* (house) = *dáṅgow* (field house, shed in the

* See § 15. † See § 11.
‡ See the fourth part of the "Bataksch Leesboek," p. 111.
§ L. l. p. 156; *buluh* is bamboo, and *bulu* hair. ‖ See below, § 15.

field); *trósa* (debt) = *dosa* (sin in Malay, from the Sanskrit), guilt to be redeemed by money in Batak, &c.

2. *Ndr* is *nd* in Malay, &c., *nr* in Mangkasar or Bugis; v.g. *tándrokă* (horn) = *tánduk* (Malay); *rìndriñă* (wall of a house) = *dinding* (Malay), *rinring* (Mangkasar); *ándro* (day) = *ándow* (Dayak); *mándro* (to bathe) = *mandi* (Malay, see 3), *mánduy* (Dayak); *trándrakă* (hedgehog) = *lándak* (Malay), &c.

3. A final *o* (*u*) represents very often a final *i* in a sister tongue; which is to be explained from a final diphthong *uy*, still existing in some languages; v.g. *áfu* (fire) = *api* (Malay), *ápuy* (Kawi and Madurese); *láño* (swimming) = *lángi* (Javanese), *lánguy* (Kawi), *tánguy* (Dayak, see *Addenda* at the end of this article); *mándro* (see 2) = *mándi* and *mánduy*, &c.

4. Where a *d* in Javanese and Batak is represented by *j* in Malay and Balinese, the Malagasy has *r*; v.g. *órană* (rain) = *udan* (Javanese and Batak), *hujan* (Malay and Balinese); *ráhană* (to cook) = *dáhan* (Toba), *dakan* (Daíri), *jákan* (Balinese). But when the word has already an *l*, the *r* is assimilated, perhaps because the Malagasy disliked formerly the company of *l* and *r* in one word, just as the Batak does now;* v.g. *lálană* (road, path) = *dalan* (Javanese and Batak), *jalan* (Malay and Balinese); *lela* (tongue) = *dila* (Batak), *lidah* (Malay); *lélakă* (to lick, to lap) = *dilat* (Javanese and Batak), *jilat* (Malay).

Observation.—The final *k* of *lélakă* is changed into *f* before the suffix *ină*: *leláfină* (what is licked or lapped); from which it appears that it is the same word as the Dayak *jelap.*

5. *Di* in the Hova dialect is in the other Malagasy dialects, as also in Batak, Malay, &c., *li*; *hády* (to dig) = *háli* (Toba), *káli* (Menangkabow), *gáli* (Malay); *dinta* (leech) = *linta* (Toba and Mandailing), *lintah* (Malay, &c.); *sódiñă* (fife, flute) = *súling* (Malay), &c.[1]

VII. Sanskrit words there are in Malagasy (see VI. 1, and III. 1), but they have undergone the changes of native words, from which we may safely infer that the Malagasy branched off from the languages of the Indian Archipelago after the influence of the civilization of continental India had taken place. The Arabic words[2] have passed into Malagasy directly, v.g. *adimízană*

* See "Tobasche Spraakkunst," § 24.

[1] [Compare also *dimy*, *limy*, five, Malay, *lima*; *tady*, *laly*, rope, Malay, &c., *tali*; *todika*, *tolika*, turned round, Malay *tulih*, look askance; *vadika*, *valika*, overturned, Malay *balik*; *faly*, *faly*, tabooed, Malay *pamali*; *fily*, *fily*, to choose, Malay *pilih*; *vily*, *viby*, price, Malay *bĕli*, to buy; *diditra*, *lilitra*, coiled, Malay, *lilit*; *hoditra*, *holitra*, skin, Malay *kulit*.] Other rules of the transmutation of sound will be found in the course of the grammar.

[2] [See the following contribution to the *Antananarivo Annual*, No. II. pp. 75–91 (Reprint, p. 203–218), L. Dahle, "The Influence of the Arabs on the Malagasy Language" (cf. No. V. p. 44, and No. VII. p. 21), and the same author's "Madagaskar og dets Beboere," Christiania, 1876, vol. i. 93–95.]

(the tenth month, Arabic الميزان),* *talata* (Tuesday) is the Arabic ثلاثا, pronounced in Malay and Javanese *salasa*.

VIII. A deeper plunge into the grammar of the language is necessary to convince the reader that the conquering lank-haired tribes came from the west coast of Sumatra after having mixed with a tribe resembling the Nias people, of whose language we know next to nothing.[1]

IX. The island of Madagascar may be said to possess one language. Varieties of dialect exist, of course, but are not so numerous that people residing in different parts cannot understand each other, some practice enabling them to sustain a conversation. The principal varieties consist more in a different pronunciation, as will be stated hereafter (§ 17), than in an entire change in the words themselves, or in the structure of the sentences.[2] The Malagasy chiefs like to use in their legislative discussions an ornamental language, consisting of rather high-sounding words that paraphrase the idea, and are easily understood by the context. The Sakalava say, for instance, *ny mahaléña* (what is moist) instead of *órană* (rain), *ny mahétsaká* (quencher of thirst) instead of *ráno* (water), *famónty* (lenitive, emollient) instead of *sólika* (Hova, *sólikya*) oil, &c. Such periphrastic words are also used to speak without offence, or out of delicacy; so the Sakalava say instead of *amboa* (dog), *fandróakă* (the driver away), because this animal is considered dirty with them as with the Batak (even those that are not converted to Islām, who call a dog in conversation *pangáyak* (pursuer) or a shame-giver (*pananggáı*),† because the words for dog (*ásu*, *bíyang*, and *ánjing*) are frequently used as terms of abuse. Instead of *vehivávhy* (woman), the Sakalava commonly use *ampisáfy*, who possesses a *sáfy* (which signifies: the hole wherein a hammer is hefted or helved, and figuratively, the *pudendum muliebre*); which reminds me of the Batak *bujing*, which in some parts of the country means *pudendum muliebre*, in others a virgin (commonly repeated *bujing-bujing*). The Betsimisárakă say instead of *maso-ándro* (sun) *fanjáva-be* (great illuminator, lighter). A word is offensive or otherwise according to the different

* In Malay and Javanese adopted without the *l* of the article (see also VI. 5), and with a different meaning.

[1] [A Dutch-Nias Vocabulary is contained in pp. 61–84 of M. J. T. Nieuwenhuisen's "Verslag omtrent het eiland Nias" ("Verhandelingen van het Bataviaasch Genootschap," vol. xxx., and a grammatical sketch by N. Sundermann in vol. xxviii. of the "Tijdschrift" of the same Society.]

[2] [See *Antananarivo Annual* No. VII. pp. 16–19, and other parts of the *Annual*, *passim;* also J. Richardson's "Lights and Shadows," Antananarivo, 1877, Appendix II.; J. S. Sewell, "The Sakalava," *ib.* 1875, p. 22 f.]

† In the Batak Dictionary this word is by mistake put under *tangga* I. and should be put under II.; to give shame in Batak is the term for scolding, abuse (see *ila* in the Batak Dictionary).

parts of the country; so, for instance, *ampela* (girl) is almost an abusive term (strumpet) in the north.

I. Phonetic System.

Of the Letters.

§ 1. The alphabet (*abidy*), introduced by missionaries, consists of twenty letters, and is recited *a*, *ba*, *da*, *e*, *fa*, *ga*, *ha*, *i*, *ja*, *ka*, *la*, *ma*, *na*, *o*, *pa*, *ra*, *sa*, *ta*, *va*, *y*, *za*.

a. According to French authorities,* the Malagasy was written formerly with Arabic letters, the power of which, however, was changed, the Malagasy *z*, for instance, being represented by the Arabic *ya* (Intr. iii. 5, Observ.). It would be very useful to consult Malagasy compositions in the Arabic character,† in order to correct some blunders that have evidently been committed by the European ear.

Observation.—Instead of *abidy* the alphabet should have been called *abada;* but the English missionaries forgot that they had given most of the vowels the power they have in French.

The Vowels.

§ 2. The *a* is sounded as in French. The *e* is the French *e fermé* (as *a* in slate). The *o* is sounded as *ou* in French, or *oo* in book, whereas the French *o ouvert* as in *apôtre* (nearly as *aw* in law) is written *ô*. The *i* is sounded as in French, and when occurring as the final of a word is written *y*.

The Diphthongs.

§ 3. The only diphthongs are *ai* (as final written *ay*, § 2), which is also written *ei* (as final *ey*), and *ao*. The *ai* or *ei* is sounded as *ey* in they, and the *ao* as *ow* in row.

a. The *ai* is often contracted into *e*, principally when losing the accent by the influence of a suffix; v.g. *kekèrină* (*kaikitră* + suffix *ină*), *béngy* = *baingy*, *béko* = *baiko* (Hova, *baikio*). In an accented syllable it sometimes loses either its first (*a*) or its last element (*i*), v.g. *boraiky* = *boríky*, *bíngio* = *baingio*, *sáky* = *saiky*. If it is repeated, the first one is reduced to a mere vowel; v.g., *irai-iray* (some) from *iray* (one) is sounded *iréray*, whereas *iray-ráy* signifies of the same father, from *íray* and *ráy* (father). The pronouns *ízay* and *ízao* are commonly sounded *ízè* (*è* as the French *e ouvert*, or nearly as *ea* in head), and *ízô* (§ 2).

* See Flacourt, "Histoire de la grande île Madagascar," p. 195.

† Flacourt, l. l. p. 188, gives a list of thirteen astrological books, of which the titles are evidently Arabic; and (p. 177) he gives the title of an Arabic-Malagasy Dictionary, and twenty-seven titles of books on medicine.

b. The vowel belonging to a prefix or suffix should never be pronounced as a diphthong with the following or preceding vowel of a word; *maítso* is *ma-ítso* (*ma* prefix), *maózatră* is *ma-ózatră*, *fakáină* (*fáka* + suffix *ină*), &c.

Observation.—Johns' "Malagasy-English Dictionary," Griffiths's "Grammar," and that of the French Jesuit * speak of a great many diphthongs evidently by mistake.† Griffiths calls *ai* in *maina* and *taitra* a diphthong, but the French Jesuits accent *maína* (§ 5 *a*) and *táitră*. It is evident that the French grammarians mean by diphthong two vowels following each other, and forming two separate syllables, as may be seen from the following passage in their grammar (p. 15):—"If the accent of the root is on a diphthong, as *táo*, *váo*, *hóatră*, *záitră*, *sáotră*, it passes then (when a suffix is added) from the first vowel to the second without leaving the syllable"—v.g. *zaírină* for *záitră* and *ină* (§ 10, II.). I think both the French and English grammarians[1] have fallen into the mistake of the Dutch in their Malay grammars, where two consecutive vowels (in separate syllables) are stated to form a diphthong.‡ The two diphthongs mentioned above are peculiar to the Hova dialect, the provincial having instead of them *è* and *ô*. Perhaps these diphthongs have originated in a former orthography according to the Arabic system, wherein *e* and *o* are represented by an *a* followed by a final *y* and *w* (compare *Observation*, § 4).

The Consonants.

§ 4. The *j* is sounded as *dz* in adze. The *g* is always hard (as in give), and the *h* aspirated (as in hunt). The *v* is sounded as *w* in Dutch and German.

a. The Hova dialect, which has become the literary language, has but two nasals—viz., the dental (*n*) and the labial (*m*), while the guttural nasal (*ng*, as in singer) is not represented by a separate character, and only occurs there as a final before the guttural consonants *k* and *g*. The combination *ng* should therefore be sounded as *ng* in longer. In the provincial dialects, however, the guttural nasal (the ڠ of the Malay) is used also as a medial, and is represented by the French Jesuits by *n* with the grave accent; § v.g. *aṅdrană* (name = Kawi and Sunda *ngáran*). The Dutch, in their transliteration of the Malayan words, represent it by *ng*,

* [Generally attributed to Père Webber.] "Ile Bourbon," 1855.

† As, for instance, *ia* and *io*, which are syllables commencing with consonantal *y* (*ya* and *yo*, see § 16).

[1] [The grammars by W. E. Cousins (1872 and 1885), J. Richardson (1884), and G. W. Parker (1883), are free from this error.]

‡ See, for instance, the third edition of De Hollander's "Handleiding bij de beoefening der Maleische Taal en Letterkunde," p. 31, where *dáun* is stated to be a monosyllable. The pronounciation *down* belongs to the lingo of European Malay.

§ For want of the proper type, we express this guttural nasal by *ṅ*.

whereas *ng*, as in longer, is written by them *ngg*. Even the French weak guttural nasal sound, as in son, sein, is unutterable to the Hova: *du vin* has become *divay* (wine), *gant* is *ga* (glove), &c. The word for soap (*savony*) is not taken from the French, but is Arabic (صابون). The *ṅ* gives the advantage of distinguishing words that are homophonous in the Hova; v.g. *óraṅă* (crayfish) = *úrang* (Javanese), but *órană* (rain) = *údan* (Javanese and Batak).

b. In the provincial dialects too there is a palatal nasal (the *ñ* of the French Jesuits) to be sounded as *gn* in French (*règne*) or nearly as *ni* in onion. It is the ڽ of the Malay.

Observation.—That the literary language does not express these two nasals is perhaps owing to the Arabic character,* which has no separate letters for *ṅ* and *ñ*, nasals which are unutterable to the Arabs as initials, medials, or finals of a word (the proper name *Palémbang*, on the east coast of Sumatra, is sounded by the Arab *falimban*).

Of Dumb Sounds.

§ 5. The vowel of the final syllables *ka* (sometimes *kia*, § 16), *tra* and *na* is but very slightly sounded, or, according to the dialects, left out altogether; v.g. *rávină* (leaf = Malay *dáun*, Kawi *ron* instead of *ráun*), *ólitră* (worm = Malay *úlat*, Javanese *úlĕr*), *kóhaka* (cough, compare Batak *hóhak*, expectorated spittle). These syllables will henceforth be called dumb syllables.

a. If the dumb syllables follow immediately the accented syllable, their vowel is sounded as an echo of that of the preceding syllable; v.g. *rítră* is nearly *rítri*, *maína* is almost *maíni*.

b. Every final syllable, if immediately following the accented one, has an almost imperceptible sound, which may be changed into any other vowel (compare § 12, 14, *a*), and very often is but an echo of that of the preceding syllable; v.g. *tóro* (provincial, as in Javanese) = *tóry* (*ma-tory*, to sleep), *viláṅy* (cooking vessel) is almost *viláṅă* (= Malay *bălánga*).

c. The *a* of *ka* is often clearly sounded when followed by the syllable *ha* of a following word; v.g. *manápaka házo.*

d. The *y* is nearly dumb—

1. in the pronoun *ny* (of him, of her, its); v.g. *ny áda-ny* (his father) is sounded nearly *ny ádan;*

2. in the final syllable *ny*, when taking the place of *na* (§ 8); v.g. *ny ráviny ny házo* (the leaf of the tree) is sounded nearly as *ny rávin ny házo.*

The Accent.

§ 6. The accent is on the penultimate, save when the word having more than two syllables, although not derived, terminates

* Compare Observation, § 3.

with a dumb syllable (§ 5), in which case it is always on the antepenultimate; v.g. *viláñy* (§ 5*b*), *faláfa* (the mid rib of the banana leaf; compare Malay *palápah*), *hólatră* (mushroom, Malay *kúlat*), *rávină* (§ 5), *lálană* (road, path, Javanese and Batak *dálan*), *laléna* (law), *táñană* (hand, Hova *tanană*, § 4*a*; Malay *tángan*), *tanána* (village), *kóhakă* (§ 5). The vowel of the syllable immediately following the accented one must never be sounded so as to become an *ĕ* (as in English *bettĕr*, Dutch *betĕr*), and § 5*b* must be attended to. The accent is not influenced by a prefix; v.g. *habé* (prefix *ha*, root *be*).

§ 7. The accent passes on to a following syllable by the influence of a suffix; v.g. *vonóină* (*vóno* + *ină*), *fakáină* (*fáka* + *ină*), &c. The monosyllabic roots, and those that have the accent immediately before the dumb syllables, are excepted; v.g. *lávină* (*la*, inserted *v*, and *ină*), *bézină* (*be*, inserted *z*, and *ină*), *ankafízină* (what is tasted), from *mankafý* from *fy* (§ 6).

a. In compound words the last word has always the accent; v.g. *tokový* (iron trivet), from *tóko* (trivet), and *vy* (iron); *salazambý* (gridiron) from *salázană* (see p. 266, above) and *vy*.

Change of Vowels.

§ 8. The dumb *a* (§ 5) is assimilated to the vowel of the preposition *ny* (of) following; v.g. *ny ráviny ny házo* (§ 5*d*), instead of *ny rávină ny*, &c., *sóratry ny ólonă* (writing of men), instead of *sóratră nv*, &c., *mpamápaky ny ólonă* (ruler of men), instead of *mpamápakă ny*, &c.

§ 9. An *i* is changed into *e* by the influence of a suffix—

1st. Mostly when the preceding syllable has another vowel than *i*; v.g. *kekérină* (*kékitră* + *ină*, § 10, II.), *olérină* (*ólitră* + *ină*, § 10, II.), *matésa* (*maty*, inserted *s* and suffix *a*), *atréhină* (*átrikă* + *ină*, § 10, I.), &c.

2nd. When it occurs in the first syllable of a bisyllabic word terminating with the dumb syllable *tră*; v.g. *rétină* (*rítră* + *ină*, § 10, II.).

a. Often a final *i* (§ 2) is changed into *a* before an inserted *z* (§ 14), when the suffix *ană* is added; v.g. *salázană* (*sály* + *ană*) *topázană* (*tópy* + *ană*), *tambázană* (*támby* + *ană*), *dimbázană* (*dimby* + *ană*), *fafázană* (*fáfy* + *ană*); comp. p. 266, above.

b. The final *i* of bisyllabic words sometimes coalesces with the initial vowel of the suffix *ină*, and receives the accent without becoming long; v.g. *ahína* (*áhy* + *ină*), *irína* (*íry* + *ină*), *tahína* (*táhy* + *ină*). It becomes accented *e* with the initial vowel of the suffix, if the first syllable of the word has no *a* or *i*; v.g. *jeréna* (*jéry*), *teréna* (*téry*), *vonjéna* (*vónjy*), *ekéna* (*éky*), *voléna* (*vóly*), *reséna* (*résy*), &c. In the same way the final *a* of a bisyllabic root coalesces with the suffix *a*; v.g. *mombá* (*mómba* + *a*), *migadrá* (prefix *mi* + *gádra* + *a*).

c. The *a* resembles often the French *e ouvert* in the suffix *ană*, when it is preceded by an accented *i;* v.g. *fehíană* and *famakíană* are sounded nearly as *fehìènă* and *famakìènă*.

d. Before a syllable, which has the accent by the influence of a suffix, an *e* or *o* of the root may be sounded as *ĕ* (§ 6); v.g. *rĕréto* (*réretră* + *o*, § 10, II.), *ĕróană* (*óro* + *ană*).

e. In the provincial dialects the *o* of a last syllable is often changed into *ô* (§ 2) in receiving the accent before the suffix *ană* or *a*; v.g. *fanaôvană* (*fanáo* + *ană*), *famorônană* (*famôronă* + *ană*), *velôma* (*vélonă* + *a*), &c.

Change of Consonants.

§ 10. The dumb syllables (§ 3) undergo before suffixes the following changes:

I. *Ka* becomes commonly *h;* v.g. *iráhină* (*írakă* + *ină*), *robáhină* (*róbakă* + *ină*), &c.

a. Rarely it becomes *t* (*robátină* = *robáhină*).

b. When it becomes *f*, the only cause of this must be a former form of the word, such as may be inferred from the corresponding word in a cognate language (see *leláfină*, Intr. p. 269). Another example is *atréfină*, next to *atréhină*, what is fronted, or faced, from *átrikă* (Hova: *átrikiă*, § 16) and the suffix *ină*, from which a former form *átrif* (§ 19, *b*) = Javanese *aḍĕp*, Batak *ádop*, Malay *hádap*, &c., may be supposed to have existed. In *hirifină* = *hirihină* (what is bored), and *hirífană* = *hiríhană*, from *hirikă* (Hova, *hírikia*, § 16), the similarity of the aspiration with the spirancy of the *f* may be the reason, as the corresponding Malay word is *girik*.

Observation. The final syllable *ip* of the Malay is pronounced *iq* * in the Menangkabow; v.g. *kátiq* = *katib* (Arabic خطيب).

II. *Tra* becomes *r*, if the word does not contain in another syllable an *r*, in which case it becomes *t;* v.g. *hoárină* (*hóatră*), *zaírină* (*záitră*), *olérină* (*ólitră*), *kekérină* (*kékitră*), &c., but *rétina* (§ 9, 2), *soritană* (*sóritră*), *sorátană* (*sóratră*), *rorítină* (*róritră*), *rifátină* (*rífatră*), *rombótană* (*rómbotră*), &c.

a. Rarely it becomes *f;* v.g. *saôfană* (§ 9, *e*) next to *saôrană* (*sáotră*). In *sokáfană* (what is opened), from *sôkatră*, a former *sókaf* may be supposed to have existed from the corresponding Toba *ukkap*, Menangkabow *singkap* (Intr. p. 266, 2). Another example is *tsentséfină* (what is sucked), from *tséntsitră* (compare Malay *săsap*, Batak *sôsop* or *sĕsĕp*).

III. *Na* becomes *n*, and where it becomes *m*, a cognate language must be resorted to; so, for instance, *velôma* (§ 9, *e*), from *vélonă*, and suffix *a* is explicable by the Dayak *belom* (to live), and *indrámină* (what is borrowed, from *índrană*), by the

* By *q* is meant a final *k* swallowed up, being a kind of click.

Batak *ínjam*. Another example is *ampinómină* (what is caused to be drunk) from *mínonă* (to drink) = Malay *mínum*.

a. *Tenómină* (what is woven, from *ténonă*), and *taómină* (what is gathered, from *táonă*) do not seem to be explainable by the corresponding words of the cognate languages (Malay *tănun*, Batak *tonun* or *tĕnun;* Malay *tahun* year, Daíri harvest time), but remind us of the constant interchanges of *in* and *un* with *im* and *um* as final syllables (§ 19, *b*) in Batak and Menangkabow.* From this is also to be explained *arémină* (what is rectified), from *árină*.

§ 11. In compound words the dumb syllables *tra* and *ka* of the first are left out, in the meantime either changing the initial consonant of the second, or requiring an inserted consonant. The change affects *h*, *f*, *v*, and *l*, which become respectively *k*, *p*, *b*, and *d;* *tapakázo* (*tápaka* + *házo*), *misipáry* (*mísika* and *fáry*), *mañombobolo* (*mañombotră* + *volo*), *mitaridákană* (*mitárikă* + *lákană*). The inserted consonants required are *d* before *r* and *z*, and *t* before *s;* v.g. *efajáto* (§ 4) (*éfatră* + *záto*), *manjaidráry* (*manjáitră* + *ráry*), *manondrotsíkina* (*manondrotră* + *síkină*).

a. If the second word commences with a vowel only the final *a* is left out; v.g. *eritréritră* (*éritră* repeated), *lavakóroñă* (*lávakă* + *oroñă*).

b. If a word commencing with *h* and terminating with *tră* or *kă* is repeated the final *a* and initial *h* are left out; v.g. *hovotróvotră* (*hóvotră* repeated), *hotikótikă* (*hótikă* repeated), *horakórakă* (*hórakă* repeated).

§ 12. The dumb syllable *na* occasions the same changes (§ 11) in composition,† losing, however, only its vowel, the remaining *n* following the class of the initial consonant (becoming *m* before labials, and *ñ* before gutturals); v.g. *mihinampáry* (*mihínană* + *fáry*), *manambóla* (*mánană* + *vóla*), *mañarañkélokă* (*mañ-árană* + *héloka*), *mañatondápa* (*mañátonă* + *lapa*), *minondráno* (*mínona* + *ráno*), *manantsáină* (*mánană* + *sáină*), *manakonjávatră* (*manákonă* + *závatră*).

a. On the east coast initial *h* in this case is often changed into *tr;* v.g. *olontráfa* = *olonkáfa* (Hova) from *ólonă* and *háfa* (compare *b*).

b. When a word commencing with *h* and terminating with *nă* is repeated, *nh* sometimes becomes *ng* (§ 4 *a*), and sometimes *tr* (compare *a*); v.g. *hozongózonă* (*hózonă* repeated), *horongóronă* (*hóronă* repeated), *hilontrílonă* (*hílonă* repeated), *helontrélonă* (*hélonă* repeated). This dissimilarity is owing to the final, where it blends with initial *h* into *ng*, being properly a guttural nasal (*ñ*), which requires a consonant of its own class, and where it passes

* See "Tobasche Spraakkunst," p. 63 *c*

† According to rules, which will be specified below, the pronominal suffixes differ, when taking place after the dumb syllable.

with initial *h* into *ntr*, being a real dental (*n*), which requires in the same way a consonant of its own class. In Toba *nh* changes into double *t*, and *ngh* (*ñh*) into double *k*; v.g. *dalάttu* (*dάlan* + *hu*), *biάkku* (*bíang* + *hu*).

§ 13. If the second word comences with *m*, all the dumb syllables are left out; v.g. *olomάsina* (*ólonă* + *mάsină*), *mamimάso* (*mamítră* + *mάso*), *toramάso* (*tórakă* + *mάso*).

Observation.—The *n* being left out here is against the rule (§ 12), but perhaps the natives sound a double *m* instead of *nm*, as in the Toba, where, for instance, *napurámmu* is the pronunciation of *napúran* + *mu*.

Inserted Consonants.

§ 14. Before the suffixes a *v* (§ 4) is often inserted after final *o* or *a*, and *s* or *z* after final *e* or *i* (*y*); v.g. *lάvină* (*la* + *ină*), *antsóvină* (*άntso* + *ină*), *nofísină* (*nófy* + *ină*), *bézină* (*be* + *ină*), *velézină* (§ 9, *vély* + *ină*), &c.

a. When one of the syllables of the word commences with a labial (*f*, *p*, or *v*) an *s* or *z* are also inserted after final *o*, to avoid the succession of syllables with similar sounds; v.g. *nofósană* (*nófo* + *ană*), *tovózină* (*tóvo* + *ină*), *fivalózană* (from *valo*, *miválo*).

Observation.—The inserted consonant is sometimes to be explained from the final of the corresponding word in a cognate language (Introd. p. 266, Obs.). Other examples are *ampalésină* from *ampάly* (a tree, the coriaceous leaves of which are used for smoothing earthenware; compare Malay *ampălas*), *fiάzană* (what is squeezed) from *fía* (Javanese *pĕrĕs*), *hihísană* (what is scraped) from *híhy* (Malay *kíkis*, § 17, 3) *hehézină* (what is scratched) from *héhy* (Malay *kakas*), *herézină* (what is fortified) from *héry* (Malay *kăras*), &c. Sometimes the inserted *z* is a *y* in the corresponding word of a cognate language, as the Malagasy has no consonantal *y* as medial (compare § 1 *a* and Introd. p. 266, above); v.g. *salάzană* (Introd. p. 266), *tetézană* (bridge) = *titíyan* (Malay) from *téty* (Malay *titi*, Menangkabow *títih* and *titis*).

§ 15. Between two substantives, of which the second qualifies the first, a nasal is inserted, which corresponds in class with the initial consonant, and occasions the above (§ 11) stated changes; v.g. *akondronjάza* (*akóndro* and *zάza*), *dintambúruñă* (*dinta* + *vuruña*), *voañkéna* (*voa* + *hena*), *voandramiάry* (*vóa* + *ramiάry*), *trañoñkala* (spider's web, *tráño*, house, and *hála*, spider), &c. Sometimes the nasal is not sounded, although the initial has suffered the change; v.g. *vatokarάñană* next to *vatoharάñană* (*vato* + *harάñană*), *atidóha* (brains), from *άty* (liver, inside), and *lóha* (head). From the materials at my disposal I can give no rules as yet by which to know either when the nasal must be inserted or not, and when it is to be sounded and when

not. So, for instance, *oviála* (wild yam), from *óvi* (yam), and *ála* (forest) without an inserted nasal, but *dintanála* (forest leech), from *dinta* (leech) and *ála*, and *ovimbazaha* (European yam, potatoes). Again we find *voatavombazaha* (*voatávo*,* pumpkin, *vazáha*, European), notwithstanding *voatavohova* (native or Hova pumpkin), instead of which one would expect *voatavoñ-kóva*.

a. To account for this irregularity I think that some of these compounds (*ovi-ála*) are only made by juxtaposition, and others by means of the preposition *ny* (as in Batak *ni*, of). In the Toba the vowel of *ni* is left out before initial *j* (nearly as *j* in judge), *t*, *d*, *l*, *r*, and *s* (v.g. *oppunjómba* instead of *óppu ni jómba*). In the Daíri we have *n* sometimes inserted between the vowels of two words in composition; v.g. *arinónan* (market day) = *ariónan* (Toba *ári*, day, and *ónan*, market, held in the field). As to an initial *h* being changed into *k*, although the nasal is not sounded, as in *vato-karáñană*, it is just according to the Toba pronunciation (§ 12, *b*). Another example of this peculiar pronunciation we shall find below (pronominal suffixes).

§ 16. The Hova likes to insert a *y* (written *i*) after the gutturals (*k*, *g*, *nk*, *ng* and *h*), when the preceding syllable has an *i*; v.g. *hovídi-kio* (pronounced *hovídi-kyo*), what I have to buy, instead of *hovídy* + *ko* (pronominal suffix, of me, mine), *láfikia* (pronounce *láfikya*) = *láfikă* (provincial, Batak *lápik*), *bíngio* (*bíngyo*) = *bíngo* (provincial), *mikiása* (*mikyása*) = *mikása* (provincial, *mi* prefix and *kása*), &c. This is a rule whenever the gutturals have *a*, and almost so if they have an *o*. The inserted *y*, however, is commonly left out in derivatives; v.g. *kihóină*, from *kíhio* (*kiho*, elbow, corner).

a. In the provincial dialects a *y* is often inserted before the suffix *enă* (see § 9, *b*); v.g. *vonjyénă* (written *vonjiéna*). In the same way a *w* is inserted before the suffix *ană*, when the preceding syllable has *o*; v.g. *fombwána* (written *fom boána*) instead of *fombána* (*fomba* + *ana*, see § 9 *b*).

b. The French Jesuits speak of an *i* added before bisyllabic words commencing with *o*, when they are augmented by a suffix, and also of an *o* before monosyllables in the same case; v.g. *ióvană*, instead of *óvană* (from *ova*), *iórină* instead of *órină* (from *ótra*, see § 10, II.), *ozóina*† instead of *zóină* from *zo*.

* *Távo* is the name (*vóa* meaning fruit). This *távo* (Batak *tábu*, § 17, 6) is in Malay *lábu* (with the first syllable dropped, the Sanskrit *alābu*). This word is an interesting proof that the Sanskrit words came into Malagasy from the Indian Archipelago. In the Malayan languages *l* and *n* interchange very often ("Tobasche Spraakkunst," p. 64, iv.) so that a former *nábu* is probable. Now the nasals having a verbal sense are often changed into the sharp mute of their class (*littera tenuis*), whenever the word is current as substantive (see Taco Roorda's "Beoefening van 't Javaansch bekeken," p. 8, annotation), and so we get *tábu* (see Addenda at the end of this article).

† Johns's Dictionary has *ozoiny* without an accent (see under *manjo* from *zo*). This work has neglected the accent to such an extent that it is sometimes im-

Dialectical Peculiarities.

§ 17. According to the several dialects the following sounds are in some words identical :—

1. *Ti* (Sakalava) = *tsi* (Hova and East coast); v.g. *ráty* = *rátsy* (bad), *fóty* = *fótsy* (white, Malay *pútih*, Nias *fúchi*); compare *tsínjo* (*mi-tsinjo*, to gaze) with Malay *tínjow*, Batak *tíndo*, *tsíndri* (*voa-tsíndri*, pressed) with Malay *tíndih*. The Daíri and Màlay have often *chi*, where Toba has *ti*;* v.g. *kóching* (Malay *kúching*) = *húting* (Toba, see 3), a cat.

2. *Li* (Sakalava and Betsimisáraka) = *di* (Hova and East coast); v.g. *linta* (also Batak, Malay *líntah*) = *dinta* (leech), *líly* = *dídy*, &c. Compare *sódină* (fife, flute) = *súling* (Malay), *tadíny* (§ 5, *b*, foramen of the ear) = *talínga* (Malay, ear), *hodídină* = *kulíling* (Malay), *hadi* (*mi-hadi*, to dig) = *hali* (Toba), *káli* (Daíri, and Menangkabow), *gáli* (Malay), &c.

3. *K* = *h*; v.g. *kély* (small) = *hély*, *kálaňă* = *hálană* (compare Toba *hálang*, Menangkabow *kalang*, &c.) &c. The Daíri has regularly *k* as medial and initial, where Toba has *h*, and even the character representing *h* in Toba is sounded *k* in Daíri.

4. *R* = *l*; v.g. *roso* = *loso* (departed), *láha* (Sakalava) = *ráha*. This change is not frequent in the Batak, and commonly takes place by phonetic attraction, by which an *l* or *r* of a preceding word is mostly changed into *r* or *l*, whenever the following has *r* or *l*; v.g. *marampis bibirna* (thin are his lips), instead of *malampis bibírna*, *silumímpang dalan* (a road branching off fingerlike—*i.e.*, with many side-ways), instead of *sirumímpang dálan*. As I have not been in a position to consult many Malagasy works written by natives, I am unable to decide whether this change is to be accounted for in the same way.

5. *P* = *f*; v.g. *fáokă* = *páokă*, *fótraka* = *pótrakă*. The Nias cannot sound *p*, and the Batak not *f*.

6. *B* or *mb* = *v*; v.g. *ambíly* (Sakalava) = *avídy* (see 2, Hova and East coast), *ábo* or *ámbo* (Sakalava) = *avo* (Hova and East coast), *ambéla* = *avéla*, *behabéha* = *vehavéha*. The Javanese has regularly *w* as Malagasy, where Malay and Batak have *b* (*úwi* = *óvi* = *úbi* Malay and Batak.)

7. *J* (§ 4) = *z*; v.g. *jámba* = *zámba*, *jéhy* = *zéhy*. The *z* in Malagasy is often *j* in Malay (*zóro* = *júru*, corner). In the Bugis *j* often represents *y* of the Malay and *z* of the Malagasy; v.g. *áju* (tree, wood, instead of *háju*) = *kayu* (Malay and Daíri, &c.), *házo* (Malagasy), *háyu* (Mandailing and sub-Toba).

8. *S* = *ts*; v.g. *pótsakă* = *pósakă*. The *ch* of Malay and Daíri

possible to see the derivation of a word; so for instance, it has *ombe*, whereas the grammar of the French Jesuits has *ombé* (chief, magnate), from which it appears that it is to be derived from *be* (great).

* See "Tobasche Spraakkunst," p. 35, D. III.

is pronounced *s* in Toba if not provided with an *i* * (*bácha*, Sanskrit *wāchā* = *básа*).

9. The Hova has often *ai* or *ei* (§ 3) where the provincial dialects have *e*.

10. Instead of the dumb syllable *tră* of the Hova, the Western dialects have regularly *tsă*, and the Eastern and Southern *chă* (*ch* nearly as in English *child*); v.g. *ĕfatsă* = *éfatră* (four, Batak *ópat* or *ĕmpat*). Flacourt † has *túmits* = *tómotră* ‡ (heel, Malay *túmit*).

11. Several words have indifferently either of the dumb syllables. The dumb syllable *tră*, when the preceding syllable has an *i*, is often *kă* (*kia*, § 16); v.g. *ma-fáitră* (bitter) = *ma-fáikă*, *pótsitră* = *pótsikă* (*pótsikia* in Hova, § 16), smashed. The Menangkabow pronounces the final syllable *it* of the Malay as *iq*; v.g. *păiq* (bitter = *păit* (فاهِتْ). It is strange that some words have a final *nă* = *kă*; v.g. *fásină* (sand) = *fásikă* (or *fásikia*) *maína* = *maíka* (dried out). In Malagasy a final *nă* represents sometimes an *r* of the Malay; v.g. *fásină* = *pásir*, *lamósină* (back) = *lamúsir* (the flesh of an animal's back which extends along each side of the spinal bone); *kámbana* (twins) = *kămbar* (Malay).

a. Sometimes this change of *nă* and *kă* is only explicable by supposing *nă* to be properly *ńă* (§ 4 *a*); so, for instance, we have *órońă* (nose), Javanese *irung*, Dayak *urong*, Hova *óronă*, and *órokă* (*mańorokă*), to smell, to kiss in the native way by smelling or touching noses; compare the two significations of the Malay *chíyum*,§ &c. Both words are originally the same, as is proved by the rule of Batak, where the Daíri dialect has as final *ń* when the Toba has *k*; v.g. *kóning* (the curcuma root conspicuous for its yellowness) = *húnik* || (Toba), *kúning* (Malay, yellow).

12. In the Hova and in the South-east coast the *s* is nearly palatal, and sounded as *ch* in French (or *sh* in English), principally by the influence of a preceding or following *i* (*mísy* is nearly *mishi*).

13. In the North an *i* is sounded as *e* when the preceding accented syllable has *a*, and sometimes also when it has an *e* or *o*; v.g. *fáte* = *fáty* (corpse), *fére* = *féry* (wound), *táne* = *tány* (earth),

* See 1.

† Flacourt's Vocabulary I have not been able to consult, the alleged word having been taken from Von Humboldt's great work on the Kawi.

‡ The "Dictionnaire Français-Malgache" (Ile Bourbon, 1855) has *tómitră* as the provincial word (see under *talon*). [Chapelier's Vocabulary ("Voyage de l'Astrolabe," Philology, vol. i.) gives *toumitz* and *toumoutch* D'Almond, in his "Vocabulaire Sakalava et Betsimitsara," *tumutsh*.]

§ See "Opmerkingen naar aanleiding van eene taalkundige verhandeling van den Hoogleeraar Roorda," p. 48.

|| See "Batak Dictionary" and "Tobasche Spraakkunst," p. 65, vi.

áhetră = áhitra (grass). The Batak has very often *e* in the last syllable where a cognate language has *i*, when one of the preceding syllables has *a*; v.g. *páte = páti* (Javanese), *baúme* (earth) = *búmi* (Malay, Sanskrit *bhūmi*). As *e* and *o* as finals are often interchanged in Batak (*págo = páge*,[1] rice in the husk), so we see the Batak *táno* to be = the Malagasy *tany*.

14. Some words commence either with a vowel or an *h*; v.g. *ózatră = hozatră* (muscle).

a. The French Jesuits mention as faulty the pronunciation of *ándra* instead of *ándro* (day), *ímba* instead of *ímbo*, *éna* instead of *éno*. The word *ándra*, however, is explicable from § 5 *b*, whereas the others may be accounted for if we consider that an accented syllable easily obscures the vowel of a following or preceding syllable (§ 9 *d*) to such an extent that it becomes colourless, and thus interchangeable with any other vowel. In the same way we have to explain *fóntra* instead of *fónitră*, *fanéntra* instead of *fanénitră* (wasp; compare Menangkabow *pañăngit*, Batak *piyóngot*). The expression *vídi-kio* (or *vídi-ko*) is sometimes sounded *vídi-ky*. A current abbreviation is *háy-ky* instead of *háy-ko izy* (I know it). Use has consecrated also the abbreviation of *ataôvo* (*atáo + o*, § 14) into *atávo*, of *ataóvy* (*atáo + y*) into *atávy*, and of *anaóvană* into *anávană*.

Transposition of Sounds.

§ 18. Transposition of sounds often takes place in words containing either hissing (*z*, *j*, *s*, *ts*) or vibrating sounds (*l* or *r*); v.g. *makály = maláky* (quick), *azahóană*[2] = *ahazóană* (*ázo*), *andrahóină* = *ahandróină* (*hándro*), *sakavíro = sakarivo* (ginger), *zoárină* = *ozárină* (*ózatră + ină*), *akítsa = atsíka* (*atsíkia*, Hova).

a. In this way *rézatră* (belching) is evidently the Batak *térap* (see further on, Note I. 7).

b. The language of the woods (*volan'tañála*) makes a rule of it, according to the French Jesuits.

Form of Primitive Words.

§ 19. Primitive words are mostly bisyllabic (or trisyllabic with a dumb syllable, see below, *b*). They are seldom monosyllabic (*be*, *lo*), and when they have more than three syllables they are either foreign words, or have the appearance of being derived either by repetition or composition. Even these words are often found to have lost one of the first syllables; v.g. *valávo* (provincial, see Introd. I.) = *voalávo* (having the appearance of being a com-

[1] [As the Batak *igong*, nose, corresponds to the Malay *hidung* (see § 11, *a*), so Batak *páge* corresponds to Jav. *pari*, Malay *padi*, Malagasy *vary*, and Tagala *palay*.]

[2] [Probably a contraction of *ahazahóana*. See Richardson's "Malagasy Dictionary," s.v. *ázo*.]

position of *vóa* and *lávo*) a rat, *batéra* (tobacco box) = *tabatéra* (French *tabatière*), *laláo* = *laoláo*, *kaítso* = *kamaítso*, *lamósină* = *lakamósină*.

a. The vowel of one of the first syllables of polysyllabic words is often uncertain (§ 17, 14 *a*) even in derived words when the accent is on a following syllable; v.g. *tetézană* = *tatézană* (bridge consisting of a narrow board, from *téty*), *laférană* = *leférană* (the hock, from *léfitră*, accordingly what is folded, where a fold is), *kobóbo* = *kibóbo*, *kofáfa* = *kifáfa* (broom, from *fafa*, *mamáfa*, to sweep, &c.), *fanjozóro* next to *fonjozóro* (pith of bulrushes, from *fo*, pith, and *zozóro*). Hence perhaps also *angádi* = *fangádi* (from *hadi*).

b. Trisyllabic words terminating with a dumb syllable must be considered bisyllabic, as is evident from the form they take before suffixes (*olérină*, worm-eaten, for instance is at first sight *óler* + *ină*, although derived from *ólitră*, worm, and *ină*).

NOTE ON THE RELATION OF THE KAWI TO THE JAVANESE.

The relation of the Kawi to the Javanese, as of a mother to her daughter, has been contested of late by Professor Taco Roorda, who is of opinion that the Kawi is not the ancient Javanese, but, on the contrary, a different, although cognate, language, which existed formerly somewhere in Java as an independent language, in the same way as does now the Sunda.* I beg leave to call the reader's attention to the great improbability of this opinion, since such eminent men, as Sir Stamford Raffles, although not having at their command the materials which have now-a-days become accessible to the Dutch, have long ago asserted the contrary. I repeat here, with a few additions, what I have elsewhere † said, to combat Roorda's opinion. It was Sir Stamford Raffles who, the first of all, took an interest in the language and literature of Java, and gave in his celebrated work specimens of the Kawi text of the "Bratayúda" (Bhāratayuddha), which, considering the time of its publication, when Javanese was not yet studied, may claim our admiration.

As the grammar of the Kawi, and a great many words in the Kawi poems, are not yet sufficiently known, I am compelled to confine myself to its phonetic system in order to show its relation to the Javanese as to its degenerated offspring. The Kawi resembles in this respect the Javanese to such an extent that a

* "Bijdragen tot de Taal-Land-en Volkenkunde van Nederlandsch Indie" (nieuwe volgreeks, vol. viii.) p. 88.

† Taco Roorda's "Beoefening van 't Javaansch bekeken," and "Opmerkingen naar aanleiding van eene taalkundige bijdrage van den Hoogleeraar T. Roorda."

great many Kawi words may be identified with Javanese only by resorting to a few phonetic laws, whereas some have only undergone a small alteration.[1]

I. When the Malay and Batak equivalent word has *r*, and the Tagal or Bisaya has *g* (hard as in *give*), both the Kawi and Javanese have no consonant. Examples:—

1. To sleep,* is in Javanese *túru*, in Kawi *turū*, in Malay *tídur*, in Bisaya *tulug* (see II.).

2. The Javanese *dus* (root of *ádus*, to bathe, as intransitive, and *ngĕdus*, to bathe, as transitive) is in Kawi *dyus* (*madyus = adus*, *mangdyus = ngĕdus*), in Malay and Batak *dírus* (*mandirus*, to sprinkle), in Bisaya *digus* (bañar a otro).

3. *Rènur* (Batak), *líndug* (Bisaya), earthquake, is, both in Javanese and Kawi, *lindu*.

4. *O'rang* (Malay), *úrang* (Menangkabow), is *wwang* in Kawi, and *wong*† in Javanese.

5. *U'rat* (Malay), root, is in Bisaya *ugat*, whereas Javanese has *wod* and Kawi *wwad*.

6. *Părah* (Malay, root of *mămărah*, to squeeze) is *póro* or *pĕroh* in Batak, *pigá* in Tagal, *pogá* in Bisaya, whereas Javanese has *poh*, and Kawi *pwah*.

7. *Terap* or *torap* (root of *terapĕn* or *torápan*, to suffer from belching or eructation) in Batak is *tigáb* in Tagal,‡ *togáb* in Bisaya, whereas Javanese has *tob* (*atob*, *a* is a prefix), and Kawi *twab* (*matwab*, to belch; *ma* is a prefix).

8. *Dăngar* (Malay to hear, *mandăngar*) is in Bisaya *dungug*, in Javanese *rungu*, and in Kawi *rĕngĕ* (see II.).

II. When the Malay and Balinese *d* of equivalent words is represented by *l* in Bisaya or Tagal,§ both the Javanese and Kawi have *r*. Examples:—

1. *Hídung* (Malay) nose, is in Tagal *ilong*, whereas Javanese has *írung*, and Kawi *hirung*.

2. *Tídur* (Malay) = *turū* (Kawi, see I. 1).

3. *Dángar* (Malay) = *rĕngĕ* (Kawi, see I. 8).

[1] [A full account of the linguistical position which ancient and modern Javanese hold to one another and to the remaining languages of the group, has been given from Van der Tuuk's, Kern's, and his own researches, by Dr. J. L. A. Brandes, in his work, "Bijdrage tot de vergelijkende Klankleer der Westersche Afdeeling van de Maleisch-Polynesische Taalfamilie" (Utrecht, 1884), pp. 72–106.]

* Of course all the languages have not an equivalent in sound; so, for instance, the Batak word for "to sleep" is *módom* or *mĕdĕm* (compare Kawi *mĕrĕm*).

† The *o* in the Javanese in these cases may be explained by the broad pronunciation in English of *water*, whereas in the Scotch and Dutch word the clear French *a* is heard.

‡ In the Batak Dictionary, under *torap*, these words are, by mistake, wrongly spelt.

§ Save when initial (see *dungug*, I. 8).

4. *Dáun* (Malay) leaf, is in Balinese *don*, in Javanese and Kaw *ron* (in Malagasy *rávină*).*

III. When a *j* of Balinese and Malay is *d* in Batak, the Javanese and Kawi both have also *d*. Examples:—

1. *Jálan* (Malay and Balinese) road, way = *dálan* (Kawi, Javanese, and Batak).

2. *Jáuh* (Malay) far, is in Balinese *joh*, in Kawi and Javanese *doh* (*madoh* and *adoh*), and in Batak *daó* or *ndáoh*.

3. *Hujan* (Malay and Bali) rain, is in Javanese and Batak *údan*, in Kawi *hudan*.

4. *Dilat* (root of Kawi and Batak *mandilat*, to lick, to lap, Javanese *andilat*) is in Malay *jílat* (*manjílat*), *jelap* (Dayak, see Introduction, VI. 4, Observation).

A. Besides, a great many Javanese words can only be explained by means of their form in Kawi. Examples:—

1. Elder brother is in Kawi and Daíri *káka*, but in Javanese *kákang*. The final *ng* can only be explained from a rule in Kawi, which still holds in Batak (partly also in Mangkasar and Javanese),† that words terminating with a vowel, when followed by a pronominal suffix, require a corresponding nasal; v.g. *wĕkangku* (my son) from *wĕka* (son), and *ku* (pronominal suffix), my. Of this rule, which has become almost obliterated in modern Javanese, the *ng* is a remnant, being mistaken for the final of the word.

2. The prefix *ma* (forming the active of verbs) in Kawi, Batak, and other cognate languages, has almost become disused in Javanese, where it has dwindled down into *a*,‡ and is often left out when the word has, or increases to, more than two syllables; v.g. *madyus* = *adus* (see I. 2), and *mangdyus* = *ngĕdus* (instead of *angdus*, the *ĕ* being necessary, as the final nasal does not correspond with the class of the initial of the root). Hence foreign words commencing with an *m*, and not being verbs, have often either lost the prefix, or have changed the *m* into *p*; v.g. *năstápa*,§ is the Kawi and Sanskrit *manastāpa*, *suwur* from the Arabic مَشْهُور, *prakaṭa* from the Sanskrit and Kawi *markaṭa*, *pĕsigit* is in use next to *mĕsigit* (Arabic مَسْجِد), *prĕdangga* next to *mṛĕdangga* (as in Kawi from the Sanskrit), *pandápa* next to *maṇḍapa* (Sanskrit and Kawi). In the passive the verb may also take the form of a substantive, by leaving out the initial nasal, and hence we find in the passive *imbar* (active *ngimbar*, to make

* See "Tobasche Spraakkunst," § 17, IV. *a*.

† In this language the pronominal suffix *ta* used in poetry requires after vowels a corresponding nasal.

‡ The prefix *mag* of the Tagal and Bisaya has dwindled down into *ag* in Iloco.

§ Also Malay.

somebody swear by the pulpit) from the Arabic *mimbar* (مِنْبَر) pulpit. The same is the case with *angsa* (in the passive of *ngángsa*, to devour) from *māngsa** (Sanskrit, flesh, meat), next to which we find *mángsa* as verb (to devour, said of monsters and animals of prey). In the Batak, the Sanskrit *māsa* (month, season) is used as verb,† meaning to be current, as a word or an expression (properly to take place in the time), and is used next to *músin* or *músim* (with the same verbal signification) although this word is a substantive, taken from the Malay (being the Arabic مَوْسِم).

3. *Srĕngénge* (the sun), also *sĕrngenge*,‡ and in the east of the island, as also in Bali, *sĕngénge*) is contracted from the Kawi *Sang Hyang Ngwe* (the God day), *sang*, prefix, *hyang*, Deity, and *ngwe*, day; *tĕngánge* (the time about noon), from the Kawi *tĕngah ngwe* (half-day), i.e., *tĕngah* (half) and *ngwe*.

B. The Javanese being fond of dissyllabic words has abbreviated a great many words, and even compounds, by leaving out either a syllable or one of its component parts. To trace them back to their original form we must often resort to the Kawi, as the greatest sagacity is sometimes unavailing, and very often apt to lead us astray. Examples :—

1. *Jămáni* (hell) from *jamaniloka* (Kawi, the residence of *Yama*).
2. *Bĕsmi* (to burn, to be reduced to ashes), from *bhasmībhūta* or *bhasmīkrĕta* (both words occur as often in Kawi as in Sanskrit).
3. *Dite* (the first day of the ancient Javanese week, and still used in astrological tables), is the Kawi and Sanskrit *āditya* (sun, *dies solis;* in Batak *adittíya* or *adintíya*).
4. *Páris* (a shield), in the dialect of Bantam § still *paríse*, from the Malay *parísey* (from the Tamil; in Batak *parítse* or *parínche*).
5. '*Angkus* (the hook to drive an elephant), from the Kawi and Sanskrit *angkuśa*.
6. *Sindur* (stark red, very red) from the Sanskrit *sindura* (red lead, as in Batak still, where it signifies vermilion).

This, I think, will suffice to prove that Roorda's opinion is groundless, and that his neglecting the Kawi has made him overlook many words in Javanese which are either corrupted Sanskrit or identical with the corresponding Malay, although seemingly different in sound.||

* In Malay still a substantive (food of animals of prey).

† In Javanese it is *mangsa*, and is still a substantive (season).

‡ The *r* is often put as a final of the first syllable of words of more than two syllables, v.g. *marmáta* = Sanskrit *manmatha*, *dirgantara* = *digantara*, &c.

§ With the natives Bantĕn.

|| Hence in his edition of Gericke's Javanese Dictionary and the Supplement which he edited with Meinsma, we find a great many mistakes uncorrected, whilst many Malay words have not been compared at the proper places.

ADDENDA.

The Dayak *tánguy* (Intr. vi. 3) received its *t* from a former *nánguy*, as *n* and *l* are very often interchanged under the influence of another nasal in the same word. In the same way we find in Javanese *linḍih* next to *tinḍih*, which may lead us to the verbal form of this word (*ninḍih*) being the cause of the collateral form *linḍih* (compare § 15, in the note). By the influence of some passive form, which, according to the genius of these languages, does not differ from that of a substantive, *tánguy* must have become = *lánguy* (Kawi) through *nánguy*, as *t* and *l* are but rarely interchanged. The identity of Batak *tonggi* or *tĕnggi* (sweet) with the Javanese *lĕgi* is to me yet a puzzle. Roorda gets rid of the difficulty by supposing the last syllable to be the root, and then by declaring the initial to be a formative consonant, although *l* is not known to have this power.

VII.

AN ACCOUNT OF THE MANTRAS, A SAVAGE TRIBE IN THE MALAY PENINSULA.

By THE REV. FATHER H. BORIE.

[Translated from the *Tijdschrift voor Indische taal-, land- en volkenkunde.* Vol. x. (1861) pp. 413–43.[1]]

THE Mantras are connected with one of those native tribes, remains of primitive races, who, in the peninsula as well as in the whole of Malaisia, were gradually driven back into the interior since the twelfth century, as fast as the Malays founded settlements on the coast.

Since that period, these tribes have wandered about in the valleys, on the mountain sides, and everywhere where solitude reigns. They are known by different names. The Karians inhabit the north of the peninsula, Burmah and the province of Ligor;

[1] [A translation of the greater part of this paper, without reference to its source, appeared in vol. iii. of the "Transactions of the Ethnological Society of London," New Series, pp. 72–83, under the title, "On the Wild Tribes of the Interior of the Malay Peninsula. By the Père Bourien." The present translation has been made from a copy revised by the author. A few pages have been omitted.]

those of Kedah, Perak and Salangor, are the Semangs; from Salangor to Mount Ophir, live the Mantras; the Jakons are stationed between Mount Ophir and the southern part of the peninsula; while the Sabimbangs, Muka Kunings and Biduandas, have settled near Cape Romania, at the mouth of the Johor river.

The following are the most general terms under which the Malays designate these savages: Orang-benua, or country people; Orang-utan, men of the forest; Orang-bukit, men of the mountains.

The different people of this peninsula appear to be connected with the yellow race of Oceania. The Mantras and Jokons are characterized by their crisp although not woolly hair, thick lips, very dark complexion, large mouth, wide nose, round and somewhat flat face, and slender limbs; they are generally smaller than the Malays, and their features express gentleness, simplicity, and timidity, which at once prepossesses one in their favour. Like the negroes of Oceania, they emit a very strong odour.

The indigenous population of this peninsula could not be estimated even on an average, considering that one cannot trust the accounts of the Malays or even the wild tribes themselves; nevertheless in my opinion that part of the population of this peninsula might be estimated at most from 8,000 to 10,000. I do not think the Mantras number more than 2,000; still I believe they are one of the largest tribes. This number, restricted as it is, must diminish, if favourable circumstances do not come to the rescue of these fallen races. The true element of mankind is society. Savage life, to which morbid speculators would wish to see man brought back—the golden age so extolled by poets—is in reality nothing but a life of misery, helplessness and unreason.

I may perhaps be pardoned for speaking exclusively of the Mantras—the first of those tribes to whom the Gospel has been preached, the only one that I have carefully studied, and almost the only one whose superstitions and traditions I have inquired into. In the first place I will treat of the origin of these savages, and see what they tell us about this themselves. In this respect we have nothing to guide us, neither monument, nor history or continuous tradition. The only facts of any value which aid us in tracing the origin of this tribe, which doubtless was once numerous, are the inter-comparison of the different dialects which are spoken by these rude tribes, the examination of their religious notions, and the study of their customs.

It is an accepted fact, that the wandering tribes of this peninsula look upon themselves as the first inhabitants of the country, and on the Malays as strangers and invaders.

I remember hearing several savages relate seriously that they all descended from two white monkeys, *unka puteh*. The two *unka puteh*, after giving birth to their little ones, betook themselves to the plains. Here they improved themselves and their descen-

dants so much that they became men;[1] on the other hand, those who returned to the mountains remained monkeys. Monsieur de Maillet, French Consul in Egypt, imagines man to have descended from a fish—is it so wonderful after this that the Mantras imagine man to have descended from two white monkeys, *unka puteh*, the most beautiful species known, and the one most like mankind? But I have also heard other savages contradict this statement, and say that monkeys are no other than fallen men. Wise men among these tribes say that God, having created in heaven a *Batin*[2] as their first king and father, gave him a consort; that from this king and queen all the tribes of the peninsula descended, and that, struck with the beauty of the banks of the river Johor (near Singapore), they came down into this place and took up their abode there.

The Mantras, who in reality admit to have had a similar origin, without mentioning the locality in which their forefathers dwelt, relate in the following way the history of their establishment in the peninsula:—

At a very early period—they cannot even tell the century—one of their chiefs, the Batin-alam, King of the Universe, having built a beautiful and large ship, set sail for Rûm.* This ship, which sailed rapidly, possessed the wonderful privilege of sailing by itself. After several days' journey it anchored in a small port, since then called Malaka. In this ship were found all the things necessary for founding a colony. The emigrants were divided into five companies; one company was to travel beyond the mountains of Johol and Rumbau; another was to follow the river Lingui to its source, and established itself there. Two other companies, penetrating further into the interior of the country, settled down—one at Klam, and the other at Jelûbu. The Batin-alam established himself on the sea-coast and exercised supremacy, while those chiefs who had established themselves in the above-mentioned provinces were only his vassals. It must be mentioned that the Great Batin, whom I visited some years ago, still claims the same rights as sovereign.

The Batin-alam's ship was not destroyed; it still exists, they say, buried under a mountain in the peninsula.† As long as this

[1] [See Newbold's "Account of the British Settlements in the Straits of Malacca," vol. ii. p. 376; and G. A. Wilken's "Het Animisme bij de volken van den Indischen Archipel" (Amsterdam, 1884), p. 73, note 3.]

[2] [*Bâtin* is, according to H. von de Wall's "Dictionary," the title of the chief of a district in the former kingdom of Johor (now Lingga and Singapore), below the *orang kâya* and superior to the *panghulu*, several of whom were generally subject to them. See also "Tjākap-2 rampai-2 bahāsa malājoe Djōhor" (Batavia, 1868–72), vol. i. p. 252, ff.]

* The Malays call the town of Constantinople Rûm or Stambul.

† Evidently these are traditions, which have their source in the history of the Deluge.

chief lived the Mantras remained sole possessors of the country. It was only long after this that several tribes, even now considered cannibals by some historians, came over from Sumatra, took possession of the country, and extended their conquests even into the interior. The Bataks killed and devoured a great number of them. There was, however, a chief among the natives, a brave man, who was fortunate enough to gather up his scattered brethren. After consulting with them, in all haste he built a ship, in which he embarked with the remainder of his tribe. They set sail for Rûm, where they arrived in a few days. The Batin Meragalang (this was the name of the chief), having seen his people safely on shore, set sail again for Malaka alone, and became the avenger of his tribe and the deliverer of his country. The rumour of his return to Malaka spread like lightning. The Bataks gathered in great numbers with the object (so they said) of roasting the old man; but the old chief had become invulnerable, and the day of retaliation was at hand.

Meragalang gave himself up to them, but never once could they succeed in wounding him. Then, turning to his enemies, he said:

"As you see, even your arms respect my flesh. Tie your arrows together, shoot them into space, and if they can fly, you may do what you like with me; if, on the other hand, according to the law of Nature, your arrows fall to the ground, attracted by their own weight, while mine have the privilege of flying, you must submit to the law of your conqueror."

This challenge was accepted; but, as Meragalang had predicted, his arrows alone could fly; of their own accord they knocked down the trees in the neighbouring forest; then, turning back towards the frightened Bataks, he cut them all in pieces. All perished, with the exception of one who, praying for mercy, obtained his life. Being the free possessor of the country through the defeat of the Bataks, the Batin Meragalang went back to Rûm, and some time after brought home his people, whom he divided into five companies, just as the Batin-alam had done. At the head of each he appointed chiefs, who all became his vassals. Long after the death of Meragalang the Bataks came again to take possession of the peninsula, and Batin-changei-besi, or "iron nails," who then ruled it, was, with his tribe, driven back into the interior.[1]

This second invasion, which was the last, must correspond, I think, with the period I spoke of at the commencement of this account. The Mantras, who till then had practised the religion of Rajah Brahil, knew how to read and write, as I shall mention when speaking of their religion.

Modesty, although feebly practised among the savage tribes of

[1] ["Journal of the Indian Archipelago," vol. i. p. 326.*]

this peninsula, and particularly among the Mantras and Jakons, wears, nevertheless, a different complexion to what it does among the Australian aborigines, who, it is said, in the midst of civilization growing around them from day to day, do not even see the necessity of covering what modesty particularly demands. The costume of the Mantras is not fixed or determined by custom; the only rule, I believe, is to cover one's self as best one can. In the forests, the only covering of the men is a band of cloth or cork; children of both sexes, up to the ages of from four to five years, are nearly always naked; the little boys still go sometimes so at the ages of seven and eight years. The women always cover themselves with a *sarong*, or a piece of stuff which takes its place. The *sarong* is a Malay article of clothing, covering the whole of the body from the chest down to the feet. The men's festival costume consists of the Malay trousers, which go below the knee, and the *baju*, or outer garment, which is a kind of vest with long sleeves; generally a coloured handkerchief on the head completes their attire. For women it is the *sarong*, as I said before, then the *baju-panjang*, or chief garment, which the Portuguese vulgarly call *kabahia;* it is a long dress, quite open in front, the two corners being joined at the chest by means of a pin.

Some men wear their hair long without any order, but oftener it is cut short; others again shave their heads after the fashion of the Musulmans. The children generally train a lock of hair several inches long on their forehead, as is the custom with the little Malays. As to the women, they take tolerable care of their hair, which they bring up on the top of the head, like the Malays, and form in a crown; round this crown they stick silver pins, or more generally tin ones; on festival days several even add a crown of flowers, or young and tender shoots of trees. Parents bore large holes in the ears of their little girls, which are meant to hold silver earrings; if they cannot get these they fill them up by means of tender banana leaves rolled into a spiral form, or even with pieces of wood cut into a cylindrical shape. Young Christian women, however, have found out that their earrings, far from being an ornament, are a disfigurement. The women possess another ornament, which they think a great deal of, this is the Malay *pinding*, a large silver plate, oval-shaped, which with them takes the place of waistband buckles. Large leaves of very thin silver, bent to form bracelets, complete their toilet; that is what the Malays call *glang*. Necklaces are placed round the children's necks, consisting of a collection of funny little bones of monkeys, boars and tigers' teeth, small coins, shells, &c.; this collar is not merely an ornament, it serves also as a talisman, and a preservative against sickness.[1]

Wandering tribes, as they are, living nearly always from hand to

[1] ["Journal of the Indian Archipelago," vol. i. p. 252].

mouth, the aborigines neither give themselves time nor trouble to build large, agreeable, comfortable, and solid houses. Their habitations hardly give them shelter from the rain in ordinary weather; they are open to all the winds of heaven, and very often have neither doors nor windows. To form an idea of these huts—I am speaking of the better class—imagine nine posts, of which six are shorter and the three others a third longer than the other six, planted firmly in the ground in three rows, the three highest in the middle row. These posts are joined together at the top by means of transverse side pieces tied together with rattan-cane; on those pieces which join the columns in the middle, they put laths to keep up the roof, and cover them with leaves. For the flooring, which is generally some feet from the ground, they put, by way of beams, on the side and transverse pieces of wood which join the posts, some laths more or less widely apart, which they cover with the bark of trees; this constitutes their flooring. The sides are pretty well covered with leaves or bark. Poor as the huts of the Mantras may be, after all I have said, those of the Jakons are even more primitive. There are some who have a fancy for perching their dwellings up in trees twenty-five or thirty feet high. The commonest of this kind are built nineteen to twenty feet above the ground; they get up by means of a ladder. Even their dogs get accustomed to living up in these airy houses. Those of the tribe who have no taste for these dwellings, build huts three or four feet from the ground. Just as with the Mantras, the first floor serves domestic purposes, here they sleep and eat by the fire, which is always lighted to drive away the gnats, with which the forests abound. In the second story the arms are kept for safety, as well as the provisions and kitchen utensils.

The aborigines eat anything they can get: boars, monkeys, squirrels, stags, rats, birds, roots, and tubercles, which grow in abundance, such as the kladis, klêdês or sweet potatoes, ubis or yams, and fruits, such as bananas, &c., the sugar-cane, which quenches their thirst at the same time that it nourishes them. The maize and rice which they cultivate, can only serve as nutriment four or five months in the year. To cultivate mountain rice, they have to make a clearing in the forest by burning, and sow it, and this requires a good deal of trouble; but to their mind, hunting and seeking their fortune in the forest is far better;[1] who knows if one might not come upon some game, some fruit, or anything else? All savages are particularly fond of hunting monkeys and squirrels, and they throw heart and soul into this sport; they think nothing of the trouble and fatigue, if they can be sure of the capture of their prey. If it is worth while they divide it among their relations, neighbours, and friends; if not, they quickly cut it up, after burning

[1] ["Journal of the Indian Archipelago," vol. v. p. 487.]

the skin, and throw the pieces into a pot to boil; as soon as it is done, each eats up silently in the dark the portion he has got hold of. This is the way in which these people manage to live.[1]

The principal weapons of the Mantras are the lance, the *parang* (a kind of sword), the *kris* (dagger), and the *sumpitan*. This last instrument of destruction, the *sumpitan*, or *sarbacane*, called *tumiang* by the aborigines, is a hollow tube five or six feet in length, composed of two bamboos, of which the exterior or sheath is called *tagur*, and the interior *anak-tumiang*, or "son of the *sarbacane*." The *tagur* is decorated with diagrams; it is generally painted yellow at the top and white at the bottom. At the *tabu*, or mouth of the *tumiang*, the Mantra inserts a light arrow,* a few inches long, its pointed extremity being dipped into a poisonous gum; then, bringing the *tumiang* to his mouth, with a mighty blow sends the arrow flying fifty or sixty feet; and it generally hits the mark. The poison, which is procured from the milky juice of a full-grown tree, called *hipo-batang*, and is mixed with certain roots, is very deadly; in a few minutes the monkey, squirrel, birds, and cats die. On man its effect is doubtful, and on fowls it has hardly any effect at all. The savage does not take the trouble to cut out the piece of flesh which is pierced by the arrow, and is generally of a bluish tint.[2]

In their general character the Mantras are good-natured and artless; they are gentle in their habits, and inoffensive; and their features at once inspire in the heart of the European a feeling of confidence, which is always refused to the Malays. The European, on his side, is sure to gain their goodwill in a very short time, if he proves himself good, gentle, easy of access, and interested in them. Timid, diffident, and conceited in the extreme, they are not naturally very communicative; they seem to have no idea of the delights of friendship. With them, each one lives merely as if he were alone in the world, and troubles himself very little about his neighbour, who is often a relation. Like most Asiatics, the Mantras are indifferent, indolent, lazy, loving rest better than anything else; thus hardly bold, hardly enterprising enough to procure themselves a life of luxury; even if they see the advantages of it, they have not energy enough to set about striving for it; hence the misery which devours them on a rich soil, that calls for nothing but a little labour to be fertilized. But if it is the question to go to the forest, they are at once as if transformed. Alone, without any other weapon than the sarbacane, a pike, and a dagger suspended from the girdle, they penetrate into

[1] ["Journal of the Indian Archipelago," vol. i. p. 254].

* After having inserted the arrow in the *tabu*, a little touchwood must be put in; without this precaution the arrow will not travel far.

[2] [Favre, "Account of the Wild Tribes inhabiting the Malayan Peninsula," p. 62, ff.]

the forests, and wander about for days and nights; while at other times, a man, woman, or child, with a lighted torch, will not mind going through the jungle to a neighbouring village to get tobacco, betel, &c.

The Mantras are of a peaceful nature, very seldom do they quarrel obstinately; the least dispute amongst them induces one party to emigrate. They are not attached to their habitations; the very smallest reason is enough to cause a new emigration. Hence that inconstant, fickle and erratic humour, which, together with fear, timidity and diffidence, constitutes the basis of their character; one might say they consider themselves anywhere more at home than where they are. As with children, common sense seldom presides over their acts; caprice nearly always carries them away. Liberty seems to them the thing they care most for, so jealous are they of their independence. Utterly free in their forests, they seldom take advice; as soon as they have made up their minds, they act always, or nearly always, according to their humour.

The Mantras, as I mentioned above, are timid, diffident and suspicious, therefore hardly frank even among themselves; they are very sensitive to reproach, irascible, and easily offended. Lying is with them, as among those Asiatics who lie, one might say, almost without knowing it, nothing but a little frailty; on the least occasion they conceal or mangle the truth.

The Mantras possess a merry disposition. There are two periods in the year, when they, free from all toil, give themselves up to enjoyment and their favourite games—in August, when the rice has been sown, and in January, after the harvest. During these two months they make merry. Every family, having got in its harvest, gives a feast, at which not only the men, women and children take part, but even the monkeys and dogs they rear. The greatest happiness they aspire to is to do nothing, and to eat well and sleep much. On such days of rejoicing, two men, armed with long wooden swords, will challenge each other to a fight, get into position, deal blows at each other, ward them off, retreat, advance, scream and make the most laughable grimaces and gesticulations, while at other times they imitate the chase after monkeys: it is indeed a pretty sight. Their other principal games are the whirligig and the *raga*, a kind of tennis ball woven with rattan, which they kick into the air with their toes.

These two games they have in common with the Malays. January, which is the time for boisterousness and gaiety, is also the time when they give themselves most up to music. At this period of the year strong gales set in, and the Mantras utilize them by perching up in the highest trees of the forest long bamboo stalks, making holes between the different knots; if the wind is strong, it gets into the bamboo and thus produces very shrill and varied sounds, which get louder according to the wind

and the length of the bamboo; this is what they call *bamboo ribut*, or bamboo of the storm; at other times they make *balings* of little bamboo tubes, a kind of weathercock, which they also fix at the top of trees. To the traveller there is something sombre about the sounds produced by these two instruments, as he hears them far away from any habitation, while at the same time they have the effect of making him hope to come upon a house soon, where he can quench his thirst and rest from his fatigue. There are others who, by means of young bamboos, make flutes hardly different from our own, from which they elicit sounds, now gay and joyous, now tender and plaintive. The favourite instrument of the women is a kind of guitar called *kranti*, which, handled by an experienced hand, has sweet and varied notes. The violin, which the Mantras call *biolon* or *biola*, in their hands plays airs which are not without certain charms.

The Mantras, like other savage tribes, are given to drinking strong liquors; if once the opportunity offers itself some drink even more than they can stand. A good many of them have learnt, either from the Malays or Chinese, to smoke opium, but very few are professional smokers, and nearly all break themselves of it, when they marry. Although poor, the Mantras are gamblers; even the women are passionately fond of gambling; several Mantras have thus contracted debts considerably larger than their means.

Some writers, from not having sufficiently studied these rude tribes whose customs they wished to portray, have pictured them to us as having nearly preserved their primitive innocence; there are some even who have asserted never to have noticed signs of grave faults among the tribes they have visited. I may say that if they had examined the customs of these people more thoroughly and known their language, it would have proved to them how necessary it was, even for the reformation of their customs, to introduce Christianity. If I had written hurriedly about the Mantras I should have passed judgment on them in all cases equal to that passed by those writers with respect to other aboriginal tribes. A longer sojourn among these wandering tribes has taught me that, amongst the carnal sins, they include one —viz., rape. Divorce has become law among them; often they marry without knowing each other, and live together without loving each other. Is it surprising after this that they separate without compunction? That is why divorce is so constant among them. It is nothing scarce to find people who have married a fourth and fifth time. According to their customs, divorce, to be legitimate, can only be effected with the consent of both parties. If the divorce is instigated by the husband, he must, according to custom, give his wife back to her family, and pay a fine to her nearest relations, then he goes away for a time, and comes back to meet

her, talks to her as if nothing had happened, and then leaves her, telling her she is free to marry again. Polygamy is forbidden; very few do not conform to this custom.

We now proceed to say a word about the ceremonies used at births, marrages and deaths. A new-born babe is treated and cared for in the ordinary way; several days after birth its head is shaved; it does not become the object of any superstition until it is old enough to distinguish its father from its mother; if it is ill it is rubbed with lime mixed with *kuniet*, a kind of turmeric. As to the mother, she keeps to herself the first few days after her confinement; when she is strong enough to take up her ordinary household duties again, she must first of all purify herself by bathing. After which she is allowed to appear again in public.[1]

The only event of consequence in a man's life is his marriage, which can only be contracted after the fourth degree of relationship. On the wedding day, the guests invited to the feast collect at the place of assembly; as soon as all are there and everything is ready, the young couple are led by one of the eldest of the tribe near a larger or smaller circle, according to the presumed strength of the affianced pair. The young girl runs off first, and the young man runs after her a few paces, if he succeeds in reaching her so as to get hold of her, she becomes his wife; if he fails, he loses her. Another time a larger course is given them: they chase each other into the forest. Tradition says, the course is neither very long nor very tiring for either of them, provided the young man is fortunate enough to please his bride.*

During my travels across the peninsula I was by chance present at several Mantra marriages. I will therefore give an exact and faithful description of one. The bride, having been attired in her best clothes by her companions, was led into the middle of a circle; here she took a seat near her future husband, who, bowing, saluted each person in the assembly by putting his folded hands on those of the person thus honoured. Then, according to custom, the three chiefs delivered endless speeches on the marriage and the good match; they did not forget to mention that, in recompense for the submission which the wife had to show towards her husband, he must not omit giving her betel to chew and tobacco to smoke every day. The *Jurukrah* (one of the three chiefs) who married them asked for the token of the union which was to be made between them. The young couple, not being able to satisfy this demand, addressed themselves to me, when, with a good grace, I gave them two handkerchiefs, which were accepted. A plate containing portions

[1] ["Journal of the Indian Archipelago." vol. i. pp. 270, 323*.]

* This custom, reported by Captain Newbold, was told me by a Frenchman, who has lived a long time at Tringano. It is not known among the people with whom I have been connected.

of rice, wrapped up in banana leaves, having been served, the bridegroom presented a portion to his future wife, who quickly took it and eat it; that done, she returned his politeness by offering him some too. Then together they distributed the remainder among the different members of the assembly. The *Juru-krah* having received a ring from the bridegroom, gave it back to him, who then put it on a finger of the left hand of his bride. The bride also, having received another from the *Juru-krah*, in her turn put it on a finger of the left hand of her future husband; this terminated the ceremony. "They are married," each tells the other. Large plates of rice are now served up with vegetables, and all set about satisfying their hunger. I remarked that the young couple ate off the same plate.

When one of the tribe dies, the corpse is wrapped in a white shroud, and washed a first time, the body remaining in this state to allow the relations of the deceased time enough to arrive, when it is washed again; then two men carry him to his last resting-place, the others either follow or precede the body. Arrived at the place of burial, the deceased is placed in a grave dug in a solitary spot, either in a lying, standing, or sitting position; if a child, it is placed in one of the two last positions, facing the east; if a grown-up person, facing the west. If the deceased has been a man of bad habits, or guilty of some crime or other, his face is placed to the east, doubtless to signify that, like a traveller in the desert without a guide, he had strayed and lost himself in false by-paths, and that, in the matter of good works, he had, like a young child, remained at the commencement of life. Care is taken to put by his side, together with a lance, a parang, but more generally rice, cups and old clothes; some plant flowers and fruit-trees near the grave. If asked why they do this, their only answer is, that such was the custom of their forefathers. At the foot of the grave a fire is lighted for three days, after which time the visits to the grave cease. The Mantras do not wear any mourning, and seldom lament over their dead. The deceased's house is abandoned by his survivors, and generally the little village even migrates.[1] The day of a person's death is kept a day of mourning; all work ceases immediately.

Misled by some persons, and by the Mantras themselves, I had thought this tribe might well be one of those of whom several modern travellers have affirmed that they are without any idea whatever of God; still I found it difficult to believe. And, indeed, a greater familarity with their language, and a residence of a few months more in the forest, proved to me that I had guessed rightly. I was agreeably surprised to discover that,

[1] [G. A. Wilken, l. l. pp. 97–100.]

not only did they have an idea of the Divinity, but also that at the last moment, when man passes from this life to eternity, they cried to God; and, what surprised me more, to our Saviour Jesus Christ. It is the custom among those Mantras most versed in ancient traditions to address God and Jesus when a person is seriously ill. A near relation of the sick person then generally says: "Lord God, Lord Jesus, if it is Thy will that he should live, have pity on him, give him back his health." From this moment all superstitions are at an end; then when the sick person's last hour has come, the same person, addressing an angel, says, "O Thou, who art the angel of my grandfather and great-grandfather, protect him from the evil spirit, and lead him up to heaven."

The Mantras have no temples, altars, priests, or idols, nothing about them which has the semblance of outward worship; but it seems that at a far distant time they knew how to pray, as I said before, in speaking of their establishment in the peninsula; at least this is always asserted by those I have asked about this subject. The religious books they have lost, agreed in every respect with the religion of Rajah Brahil, whom, like the Malays, they still call Nabi Isa, Tuhan Isa, the Prophet Jesus, the Lord Jesus. According to some, it was during the reign of Batin-alam, according to others, during that of Batin Meragalang that they lost their religious books; but nearly all agree in saying, that during the reign of Changei-besi, some fragments of their sacred books still remained, but that they only served as a remembrance, as at this time they had forgotten how to read. The only emblem which then remained was the skin of a *biawak*, a kind of big lizard, on which were some characters nobody could understand. It was Batin Changei-besi who destroyed this skin, and thus succeeded in exterminating the religion of Rajah Brahil, alleging as an excuse, that this religion had become incompatible with their way of living. According to others, Changei-besi respected this emblem, which was subsequently destroyed by a dog. This pretension of the identity of their ancient religion with that of Jesus Christ, extraordinary as it may seem at first, is nevertheless not devoid of some foundation, because it is proved now that Christianity was introduced into China about the seventh century; it is likewise proved that, about the thirteenth century, there was, during nearly a hundred years, an exchange of ambassadors and treaties between Rome and Pekin.* After this, it

* History tells us that in A.D. 328, a Persian king called Sapor, converted to Christianity, sent an ambassador to Constantine. The prince told the Emperor that Persia and the land of the Sères, or China, which was a tributary of it, boasted of many churches, and that the people came into the sheepfold of Christ by millions. In the sixth and seventh centuries fresh efforts were made to visit and restore these churches of the extreme East. Later on St. Louis, together with Pope Innocent IV. sent missionaries out to Mongolia. In 1303 Clement V. sent back Jean de Montcorvin, of the Order of St. Francis,

would not be impossible that wild tribes living among the mountains of the peninsula, may have gained a knowledge of our religion, either through missionaries sent at various periods from Rome to the Mongol and Tartar princes, or through Arian priests. Did not one of our young contemporaries, M. Crick,* quite lately come across aborigines in Assam, who look upon the cross, which they mark on their foreheads, as a necessary guide to heaven?

The religion of the Mantras may be divided as follows:—religious traditions, and superstitious beliefs and practices.

According to the Mantras there is a supreme God, spiritual, good, perfect, almighty, a Creator, who only lives in the heavens; this God whom they call Allah, Puhan Allah, Lord God, created Raja Brahil spirit like his creator, and the first after God; he has authority from God over man, that is why they call him Raja Brahil, King Brahil.† By the express order of God, Raja Brahil created Adam and Hava, Adam and Eve, the animals and plants in the heavens. Adam and Eve having been blessed with an enormous offspring, which amounted to 6666 persons, Raja Brahil represented to God that the heavenly space he had assigned to them had now become too small to contain all of them. God then ordered Raja Brahil to create a world, and as there is nobody but God, they say, who can make everything out of nothing, he gave Raja Brahil the substance of a world of the size of an areca nut. Raja Brahil having taken it, said: "*kun lauhat hu semat semat balita jadikan alah alah tindiri sindiri uha,*" and the world grew, *kumbanglah jadi.* God then ordered the bird Simerani to go and look at the universe, and with his rapid wings, Simerani flew through etherial space, rested on the still soft earth, contemplated it, and regained the heavens.‡ Raja Brahil now went down in his turn, took a survey of his work, approved of it, and went back to heaven; then, at his order, the fishes, birds, plants and animals came down by turns from heaven; man alone had been multiplied, and Raja Brahil had only created a pair of each kind that propagates itself. One has doubtless to fix at this period, according to other traditions, the descent of the first *batin* and his consort, who, struck by the beauty of the banks of

to China, with the title of Bishop of Kambulik, now Pekin. On the other hand it is proved that Arianism spread rapidly in the East, as it reached India in the sixth and seventh centuries. It may even be supposed that these abettors of heresy took up their abode in Further India, proceeding through Tartary and Mongolia; at least this is what the analogy taken from Mantra traditions seems to prove.

* M. Crick was martyred on the frontiers of Thibet by a chief of one of the savage tribes in the Himalaya, through which he passed.

† All endeavours to find out the signification of Raja Brahil have proved useless. Perhaps Raja Brahil ought to stand for raja-ibrani, King of the Jews. In Mantra, as well as in Malay, initials and finals often vary.

‡ Simerani, which the Mantras call the good God's bird, is a little red and yellow bird; it is a sin to kill it.

the river Johore, fixed their residence there. Thus, according to the Mantras, God, who resides only in the heavens, created the firmament and Raja Brahil, who is not God, although he is the first after Him, and His spirit as well as His creature; thereupon Raja Brahil created the world according to the order described above. These traditions have, as I have said before, a great resemblance to Arianism. I will give a proof of this here. Arian, under the pretext of better distinguishing the three persons in the Trinity, maintains that the Son was created, that He is not eternal, and that He was made from nothing. He gave, as his first reason, that God was too great for man to understand his immediate work, too great for him to comprehend what is infinite. Consequently when God wanted to create the world, He gave the Word to create all the rest for Him. According to this, we see that the Word is only a more distinguished and more sublime creature than others; it is not eternal, although it is the antecedent of the world; it is not even God, although the Arians give this name to it. The Mantras, as well as the Malays, believe in the existence of good and bad angels, and say that every man possesses a good and a bad angel. They believe in the immortality of the soul, in the end of the earth, in the last Judgment, in Paradise, and Hell, and even in a Purgatory, as will be shown by what I am going to say.

Mankind having ceased to exist, there will arise a great wind, followed by incessant rain; the water will rise and descend with rapidity; flashes of lightning will rend the air everywhere; the mountains will give way; a great heat will arise; there will be no more night; the earth will dry up like grass in a field. Then God will come unexpectedly; He will come down surrounded by an immense whirlwind of flames ready to consume the universe; but first, God will gather together the souls of the sinners, burn them a first time, weigh them after gathering the cinders by means of a very fine cloth called *kain-kasoh;* those who have been thus refined a first time without being purified will be burned and weighed again, up to seven times. As to the souls who have been purified, they will go to heaven to rejoice in their happiness with Raja Brahil and the other chosen ones; whereas those that have not been purified—that is to say, the souls of the greatest sinners, such as the murderers and those who are guilty of rape—will be thrown into hell, to suffer the torment of fire with the demons. There will be tigers and serpents in hell to torment the condemned. God, having taken some fire from hell, will close it up, and then burn up the universe.

This is the belief of the Mantras, who are versed in the traditions of their forefathers. This illusion is mingled with many Christian truths. From whom have they learnt all this? That is what I cannot tell. At any rate, the Mantras, from being

generally in intercourse with the Malays, have necessarily been obliged to learn certain truths from them, which are common with us; and I only maintain here, that they have not learnt them only from the Malays, whose religion they have not adopted, seeing that they do not recognize Mohammed as a prophet or a messenger of God, and that they call him Tuhan Isa (the Lord Jesus), whom they are in the habit of calling upon in the hour of death, praying him to take their souls to heaven. The Mantras place and find a demon everywhere—in the air they breathe, in the soil they till, in the forests they inhabit, in the water they drink, in the trees they fell, and in the caves of the rocks. Their idea is, that a demon is the cause of every unlucky event. If they are ill, it is a demon who is the cause of it; if there is an accident, it is still the bad spirit who is the cause of it; hence the demon is named after the evil he is supposed to be the cause of. Consequently, as the demon is supposed to be the author of every unlucky event, all their superstitions turn upon enchantments and on spells to appease the evil spirit, and to make ferocious animals gentle and tractable. If they want to excite sensual love, hatred, and jealousy, they have recourse to *lemu* or witchcraft. Persuaded that every evil is caused by a demon, they try to pacify it or compel it, by certain observances called *tankal*, to quit its abode. After procuring certain herbs and roots, they pronounce some magic words, which they do not even understand, take the medicine to the sick person, and enjoin on him certain foolish prohibitions; another time they suspend little packets of saffron and terak round his neck, over which they also pronounce some magic words. This is what we call amulets and talismans. The *Pavans** and other magicians, who possess the power of afflicting men by their hidden science, cannot operate on all kinds of people; there are several of these, who, by a supernatural art, know how to surround themselves with invisible armour, so to speak, which renders the charm useless, and prevents the *pavan* from seeing in the water the image of the person he wants to harm. If a magician wants to harm a person, he must be able to see his image in the water, and a gentle breeze must blow in the direction of the dwelling of the person he intends to operate upon. Generally the *pavan*, who wants to harm his enemy by means of his diabolical art, tries to get some of his hair or anything which belonged to him, even if it is only the remains of what he has eaten; he then practises his incantation on what he has been able to lay hands on, throws it on a fruit or anything else, which he then hides in the earth;

* The *Pavans* are the sages and doctors of the tribe. They are generally dreaded by the Mantras, but the Malays have a great veneration for them. There are some *pavans* who are only clever at discovering tin mines; these are the *tima-pavans*. [*Pâwang* and *poyang* are convertible terms.]

this charm affects the first person who treads on the hidden object, even if the *pavan* had no intention of hurting him personally. This is the origin of the dread which the aborigines have of the *pavans*.

The Mantras hold that every mountain has its good and bad spirit, and that every mountain is a wishing place.[1] The most celebrated place is that at the top of Mount Bermun in Songei-ujong. This mountain is very high, a dense mist crowns its summit, which loses itself in the clouds; it is said, there is a lake on its slope. When a person goes to a wishing place, he takes with him two white chickens, and something of every kind of common food; he puts all this into a rattan basket, which he hangs on a tree, or else he places it on the highest point of the mountain; then he kills one of the chickens, and gives the other its freedom; this done, in the stillness of his heart, he tells the mountain spirit all the wishes he cherishes, after which he prepares his meal, which he eats on the spot. If what he wishes is not granted, he visits the same place up to three times, and if it is not granted even then, he addresses the spirit of another mountain. Among the most celebrated wishing places is the rock called Batu-tré, in the Klam district, which, it is said, the Mantras have been in the habit of visiting since time immemorial. A person going to this rock may not carry fire with him, for if a spark were to fall on the rock, it would immediately take fire and be consumed. On this rock there grows a flower called *chinkani*, which is only to be found here. A woman only possesses the privilege of picking it; through its magical virtue she becomes greatly famed in a very short time, and is followed by an endless number of lovers, or, if the possessor be a man, of sweethearts; for, although a man may not pick it he can steal it.

Proud as the Mantras are of their unfettered life, and fond of their liberty, although under the yoke of the Malays by right of conquest, they are governed, according to ancient customs, by certain chiefs who exercise sole authority in their districts. The power of the Malays over them is really only nominal; they migrate, assemble together, deliberate, judge offences, and punish delinquents without admitting any control. Just the same as in the old days, the Mantras are still governed by a great chief called *batin* or *batu-kapala* who, as it were, is the Sultan of the race. This *batin* is a descendant of the imperial family. The *batin*, before dying, chooses his successor, who is accepted and recognized by the nation, but he may not choose one of his own children, and must appoint a prince of royal blood. The great *batin* treats the Malay Sultan as his equal. When he goes out in state, he walks in the centre of a cortége, preceded by the white flag; the procession is headed by a yellow standard-bearer, and closed by a red standard-

[1] ["Journal of the Indian Archipelago," vol. i. p. 319.]

bearer. The great *batin* takes part in the elections of the Malay chiefs of Johol, Songei-ujong, Jelabu and Klam. The new *batin* must be recognized by the *pangulus* or the Malay chiefs mentioned above. These reciprocal rights have now gradually fallen into disuse. There are several inferior chiefs under the great *batin* who are vassals, and who also go by the name of *batins*. To make these *batins* legitimate, they must be elected or at least approved of by the great chief. The *pangulus*, who always try to encroach upon the rights of the native chiefs, have taken upon themselves the right of electing the inferior *batins* (after first summoning the tribe). The great *batin* alone possesses the right of deciding on war and peace, and on confirming in the last instance the judgments delivered by the inferior *batins*. Every *batin* in his own district has power over life or death, a right which he does not exercise except in a certain way. Under the great *batin*, as well as under the inferior *batins*, there are two other subordinate chiefs—viz., the *jennang* or viceroy, and the *juru-krah*, the magistrate, or the one who conveys orders. The duties of these two chiefs are expressed in the following proverb : "*jennang hujong lida batin, juru-krah lida jennang*," that is to say, the *jennang* is the extremity of the tongue of the *batin*, and the *juru-krah* the extremity of the tongue of the *jennang*. The power of the great chief of the aborigines has shared the fortune of the Malay Sultans, which is now only imaginary; the vassals or inferior *batins* are, in fact, independent. Administration is really everywhere, where there are Mantras, even in English territory, carried on as follows. All business, whatever it may be, is laid before the *juru-krah*, who looks into it, makes inquiries about it, and decides it if it is in his competence, if not he refers it to the *jennang*, who finishes it if it is within his functions; if not, he goes up (as they express it) to the *batin* who looks into the matter and judges it without appeal. In the same way if this *batin* wants to convey orders, he communicates them to the *jennang*, the *jennang* to the *juru-krah*, and the *juru-krah* to the people. As I have said, the *juru-krah's* duty is to draw up a report ; he judges small cases of stealing, quiets small tumults, and brings together young men and women with a view to marriage. The *jennang* receives the *batin's* orders, takes his place when needful, and judges cases of stealing when the value does not exceed four or five piastres, settles disputes, and performs the marriage ceremony of the *juru-krah*. Such is the rule as to the government of the aborigines of the peninsula, such are the old customs, though practically now the different chiefs are separated, and each one governs those families who attach themselves to him, and it is only in very out-of-the-way cases that the chiefs meet together to consult in common.

The Mantras, as well as the other wandering tribes inhabiting the interior of the Malay Peninsula and the inhabitants of the

islands in the Indian Archipelago, have their own language, a language simple enough in its construction, but often difficult to pronounce, for this reason that it has not the plain full sound of the Malays. It is not very precise or handy for expressing abstract ideas; the Christian Malays were also the first to ask whether their religious language might not be the Malay, as it was clear and better fitted for expressing religious ideas. This is why we instruct them in Malay, a language which all the aborigines can speak.

Every tribe has its separate dialect, and so different are they one from another, that Malay has often to be resorted to as a medium of communication. Thus, a Jakon will not understand a Mantra, and a Mantra will hardly understand a Besisi, &c. The words which the actual Mantra language is composed of may be divided into four classes—Sanskrit, Arabic, Malay, and Mantra. Sanskrit words used in the Mantra language are, with very few exceptions, the same as in Malay. Arabic words are rarer than Sanskrit words, for this reason—that the Mantras, not being Musalmans, have not accepted their theological, metaphysical, legal, and ceremonial terms. The third class includes Malay words, several of which have remained without any alteration worth mentioning, such as—

orhang for *orang*	=	man
prompuan	=	woman
laki	=	husband
jantang	=	male
betina	=	female
bini	=	wife, &c. &c.

It is to be remarked that certain Mantra words, though pronounced like the corresponding Malay words, are used in a different sense, such as—

Mantra.	*English.*	*Malay.*	*English.*
issi	to be to have	issi	to fill to fill up
mamak	uncle	mamak	uncle or aunt from the father's side.

A great many other words are pronounced so differently that it is difficult to recognize them at first sight, such as—

Mantras.	*Malay.*	*English.*
Bapai	Bapa	father
moï	ma	mother
enek	anak	son
sedorhah	sudara	brother
bessabat, sabat	sobat	friend
mintai	minta	to ask
bavai	bavak	to bring
seumbah	sumbah	to offer
tingikeun	tinggikan	to raise
majar, maajar	mengajar	to teach

Mantras.	*Malay.*	*English.*
bahoi	membaukan	to smell
hilai	hila	to draw, make follow
bederhi	berdiri	to stand up
beubaleh	baleh	to turn, come back
bukai	buka	to open, unfasten
reuthi	arti	to understand
sapoi	sapu	to wipe, to sweep
nimbai	timbahkan	to draw, to draw water
mai	mare	to come
niap	tida	not
lah	sudah	already
lah besua	sudah bisua	to have met
loh	ada	to be, to have
loh orang tai	ada orang tadi	there were people
untai, tai	tadi	instantly, presently
peheu	jangan	do not
lebehkan	tida tau	to ignore, not know
mo'	mau	to will
moh	pergi	to go
moh chiun	pergi sana	go down there
maichian	mari sini	come here
habat	sada, tyada guna	only, unintentionally
saket, habat	saket, siket	indisposed
tumiang	sumpitan	pea-shooter
chakap habat	chakap sadya	he only says so
guma	sukah	happy
géhè	abang	elder brother
gaho	kaka	elder sister
inak	maksu	aunt
mamak	paksu	uncle
taühouè	tengoh (pendang)	to see, to consider
genoi	tauh perampuan	grandmother (in an honorary sense)
tegal	sebab	cause, motive
toko	tambah	to increase
gan	tamau	not to wish
pret	pri saket luka	sharp pain
kesit	kring	dry
resap, kussi	tiada	there is not
netain	binatang	animal
tungkon	pasang api	to light
aji	nya	(affix), his, her, &c.
selit	glap, malam	darkness, night
sonsoich	besiol, siol	to whistle
ango	chakap, jawab	to speak, to answer
lebes	kutep, pungut	to pick up, to pick
bejuhoh	menaré	to dance
issi	ada	to be, to have
bikai	panggel	to call
serhoüe	suroh triak	to order, to hail, to cry at somebody

The second half in the above list are pure Mantra words. Where do they come from? Do they belong to the Polynesian language—that language which is supposed to have been formerly spoken in the Indian Archipelago, and of which striking examples

of similarity are found throughout Polynesia? If the true Mantra words do not belong to the Polynesian language, where do they come from? This I am unable to say, as I have nothing to help me in this wholly scientific research.

Introduction of Christianity among the Mantras.

In the year 1847 I was asked by Monseigneur Boucho, Bishop of Atalie and Apostolic Vicar of the Malay Peninsula, to establish a Catholic mission among the aborigines of the interior, which the Reverend Mr. Favre had lately visited, and I arrived at Malacca in the same year. Mr. Favre, during a recent excursion, had touched at several points in the southern part of the peninsula, and had met with several Jakons, and obtained information about a great many more.

Several days after my arrival at Malacca, Mr. Favre and myself, accompanied by two Chinese and two Malays, set out on a first journey to Mount Ophir. We pushed on to Segamat without any result, considering that we did not meet with a single native. On our return to Malacca, we started again on a second expedition, which lasted longer, and was more arduous, but also more fruitful; we visited Johol, Rombau, Sungei-ujong, and Jelabu. At Sungei-ujong we found some aborigines, who had come to be present at the wedding of the son of the Pangulu of Sungei-ujong. On our return from this second expedition, which I have described elsewhere, I settled in the company's territory, at a station three leagues distant from Malacca, in the middle of a forest not far from a Malay village called Rumbia. In February, 1848, I began my mission, which I named Dusun Maria, or village of Marie. On December 14, in the same year, when my worthy bishop visited me, he baptized twenty-three persons; and on January 16, 1849, I myself baptized several others. In May, 1851, the total number amounted to eighty-eight. As I was obliged to go back to France towards the end of the year to get rid of a jungle fever and chronic dysentery, I had to entrust to Messrs. Maistre and Leturou, the care of finishing my church, for which I had collected the material, as well as the instruction of the new comers. In 1853, God having given me back my health, I saw Malacca again, and found myself in the midst of my good flock, the number of which had considerably increased. I made the acquaintance of my new brother, whom Monseigneur Boucho had given me. Several months after Mr. Constant and myself baptized some more Mantras. A few months later my old malady returned, and I was obliged, by my Bishop's order, to leave my beloved flock again. In January, 1854, Mr. Bourrelier having been sent out to take my place, was himself attacked with jungle fever, which laid him in his grave at the end of a year and a few months. In the

meantime, having myself been restored to health, I was permitted to return to my post, to replace in my turn the worthy brother whom death had snatched away from our fond hopes. Thank God, my health has continued good since that time, December 23, 1855. Messrs. Bourrelier and Constant were fortunate enough to increase the number of Christians, and to found a school for boys as well as for girls.

These schools are my sole comfort now; the children, whom we are obliged to feed and clothe, because of the poverty of their parents, and the distance which separates them from us, are very well disciplined; every day they lose some of those erratic habits which characterize their parents. Several read perfectly, and can give an account of the Malay roots and the parts of speech of that language; the more advanced begin to read and learn to count. They can even chant a Mass and several Malay hymns, even French ones. The little girls know pretty well how to sew. The total number of the Mantras baptized up to this day is 370; out of this number sixty-five have died. Several families have gone away from us, some from fickleness, others for other reasons; but it is to be hoped that this number will be lessened in time. The grêater portion of them are faithful and attached to our religion. Although the success we have had with the Mantras is not very considerable in itself, nevertheless it is very consolatory when compared with that which several Catholic missionaries have achieved among the Karens of Mergui, and among the Laos of Camboja, Siam, and Cochin China.

The Christian Mantras have quite thrown aside their superstitions, and heathen customs, and have adopted Christian faith and habits; they have also abandoned those vagrant and savage ways which characterize them, and so they have become more civilized and intelligent, less timid and distrustful; several even have exerted themselves and have been at work day by day making themselves orchards, and some have got themselves pigs and buffaloes. Although, up to now, we have not been able to make them cultivate rice-fields, we still hope to succeed in this respect, for it is certain that the greater number are good Christians; and indeed, as the forest diminishes every day, they must of necessity, if they want to remain Christians, begin to cultivate rice-fields, without which they will be forced to separate themselves from us, sooner or later.[1] If we succeed in this, as I believe we shall, our cause is definitely gained. In calling the Mantras to us our aim is not only to baptize them, we wish also to civilize them, and make them steady and attached to their soil, by giving them as cultivators a proprietary right in it, and thus

[1] ["Journal of the Indian Archipelago," vol. v. p. 487.]

to shelter them against the most pressing wants of life, and make them Christians steadfast and firm in their faith.[1]

DUSUN MARIA, *November* 1, 1857.

[1] [The most trustworthy information concerning the rude Malayan tribes in the interior of the peninsula of Malacca is still to be found in Mr. J. R. Logan's various contributions to the "Journal of the Indian Archipelago," especially the first volume. See also Col. Low, *ib.*, vol. iv. pp. 423–32; and Père Favre's articles in vols. ii. and iii. of the same serial (also published separately, Paris, 1865); J. Anderson, on the Semang tribe, in "Considerations on the Malayan Peninsula," Prince of Wales Island, 1824, *Appendix;* T. J. Newbold, "British Settlements in the Straits of Malacca" (two vols., 1839), vol. ii. pp. 369–434; Abdallah ben Abdelkáder Múnshí, in his autobiography, has an interesting account of the Jakuns; E. T. Fleury, "Sur les races sauvages de la péninsule Malaise;" "Journal of the Straits Branch of the Royal Asiatic Society," No. 1, pp. 111–13; No. 2, pp. 208–21; No. 4, pp. 46–50; No. 7, pp. 83–7; No. 10, pp. 189–94; "Brau de Saint-Pol Lias, Pérak et les Orang-Sakeys" (Paris, 1883), p. 247, ff.]

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